

# Appendix 1

## Interactions

Two or more drugs given at the same time may exert their effects independently or may interact. The interaction may be potentiation or antagonism of one drug by another, or occasionally some other effect. Adverse drug interactions should be reported to the Medicines and Healthcare products Regulatory Agency (MHRA), through the Yellow Card Scheme (see Adverse Reactions to Drugs), as for other adverse drug reactions.

Drug interactions may be **pharmacodynamic** or **pharmacokinetic**.

### Pharmacodynamic interactions

These are interactions between drugs which have similar or antagonistic pharmacological effects or side-effects. They may be due to competition at receptor sites, or occur between drugs acting on the same physiological system. They are usually predictable from a knowledge of the pharmacology of the interacting drugs; in general, those demonstrated with one drug are likely to occur with related drugs. They occur to a greater or lesser extent in most patients who receive the interacting drugs.

### Pharmacokinetic interactions

These occur when one drug alters the absorption, distribution, metabolism, or excretion of another, thus increasing or reducing the amount of drug available to produce its pharmacological effects. They are not easily predicted and many of them affect only a small proportion of patients taking the combination of drugs.

Pharmacokinetic interactions occurring with one drug cannot be assumed to occur with related drugs unless their pharmacokinetic properties are known to be similar.

Pharmacokinetic interactions are of several types:

**Affecting absorption** The rate of absorption or the total amount absorbed can both be altered by drug interactions. Delayed absorption is rarely of clinical importance unless high peak plasma concentrations are required (e.g. when giving an analgesic). Reduction in the total amount absorbed, however, may result in ineffective therapy.

**Due to changes in protein binding** To a variable extent most drugs are loosely bound to plasma proteins. Protein-binding sites are non-specific and one drug can displace another thereby increasing its proportion free to diffuse from plasma to its site of action. This only produces a detectable increase in effect if it is an extensively bound drug (more than 90%) that is not widely distributed throughout the body. Even so displacement rarely produces more than transient potentiation because this increased concentration of free drug results in an increased rate of elimination.

Displacement from protein binding plays a part in the potentiation of warfarin by sulfonamides and tolbutamide but the importance of these interactions is due mainly to the fact that warfarin metabolism is also inhibited.

**Affecting metabolism** Many drugs are metabolised in the liver. Induction of the hepatic microsomal enzyme system by one drug can gradually increase the rate of metabolism of another, resulting in lower plasma concentrations and a reduced effect. On withdrawal of the inducer plasma concentrations increase and toxicity may occur. Barbiturates, griseofulvin, many antiepileptics, and rifampicin are the most important enzyme inducers. Drugs affected include warfarin and the oral contraceptives.

Conversely when one drug inhibits the metabolism of another higher plasma concentrations are produced, rapidly resulting in an increased effect with risk of toxicity. Some drugs which potentiate warfarin and phenytoin do so by this mechanism.

Isoenzymes of the hepatic cytochrome P450 system interact with a wide range of drugs. Drugs may be substrates, inducers or inhibitors of the different isoenzymes. A great deal of *in-vitro* information is available on the effect of drugs on the isoenzymes; however, since drugs are eliminated by a number of different metabolic routes as well as renal excretion, the clinical effects of interactions cannot be predicted accurately from laboratory data on the cytochrome P450 isoenzymes. Except where a combination of drugs is specifically contra-indicated, the BNF presents only interactions that have been reported in clinical practice. In all cases the possibility of an interaction must be considered if toxic effects occur or if the activity of a drug diminishes.

**Affecting renal excretion** Drugs are eliminated through the kidney both by glomerular filtration and by active tubular secretion. Competition occurs between those which share active transport mechanisms in the proximal tubule. For example, salicylates and some other NSAIDs delay the excretion of methotrexate; serious methotrexate toxicity is possible.

### Relative importance of interactions

Many drug interactions are harmless and many of those which are potentially harmful only occur in a small proportion of patients; moreover, the severity of an interaction varies from one patient to another. Drugs with a small therapeutic ratio (e.g. phenytoin) and those which require careful control of dosage (e.g. anticoagulants, antihypertensives, and antidiabetics) are most often involved.

Patients at increased risk from drug interactions include the elderly and those with impaired renal or liver function.

**Serious interactions** The symbol ● has been placed against interactions that are **potentially serious** and where concomitant administration of the drugs involved should be **avoided** (or only undertaken with caution and appropriate monitoring).

Interactions that have no symbol do not usually have serious consequences.

## List of drug interactions

The following is an alphabetical list of drugs and their interactions; to avoid excessive cross-referencing each drug or group is listed twice: in the alphabetical list and also against the drug or group with which it interacts.

### Abacavir

- Analgesics: abacavir possibly reduces plasma concentration of **METHADONE**
- Antibacterials: plasma concentration of abacavir possibly reduced by **RIFAMPICIN**
- Antiepileptics: plasma concentration of abacavir possibly reduced by **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**
- Antivirals: abacavir possibly reduces effects of ● **RIBAVIRIN**; plasma concentration of abacavir reduced by ● **TIPRANAVIR**
- Orlistat: absorption of abacavir possibly reduced by ● **ORLISTAT**

### Abatacept

- Cytotoxics: increased risk of side-effects when abatacept given with **ADALIMUMAB**; avoid concomitant use of abatacept with ● **CERTOLIZUMAB PEGOL**, ● **GOLIMUMAB** or ● **INFLIXIMAB**
- Etanercept: avoid concomitant use of abatacept with ● **ETANERCEPT**
- Vaccines: risk of generalised infections when abatacept given with live ● **VACCINES**—avoid concomitant use

### Abiraterone

- Analgesics: abiraterone increases plasma concentration of **DEXTRAMETHORPHAN**
- Antibacterials: plasma concentration of abiraterone possibly reduced by ● **RIFABUTIN**—manufacturer of abiraterone advises avoid concomitant use; plasma concentration of abiraterone reduced by ● **RIFAMPICIN**—manufacturer of abiraterone advises avoid concomitant use
- Antidepressants: plasma concentration of abiraterone possibly reduced by ● **ST JOHN'S WORT**—manufacturer of abiraterone advises avoid concomitant use
- Antiepileptics: plasma concentration of abiraterone possibly reduced by ● **CARBAMAZEPINE**, ● **FOSPHENYTOIN**, ● **PHENOBARBITAL**, ● **PHENYTOIN** and ● **PRIMIDONE**—manufacturer of abiraterone advises avoid concomitant use

### Acarbose

see Antidiabetics

### ACE Inhibitors

- Alcohol: enhanced hypotensive effect when ACE inhibitors given with **ALCOHOL**
- Aldesleukin: enhanced hypotensive effect when ACE inhibitors given with **ALDESLEUKIN**
- Aliskiren: increased risk of hyperkalaemia, hypotension, and impaired renal function when ACE inhibitors given with ● **ALISKIREN**—avoid concomitant use
- Allopurinol: manufacturers state possible increased risk of leucopenia and hypersensitivity reactions when ACE inhibitors given with **ALLOPURINOL** especially in renal impairment
- Alpha-blockers: enhanced hypotensive effect when ACE inhibitors given with **ALPHA-BLOCKERS**
- Anaesthetics, General: enhanced hypotensive effect when ACE inhibitors given with **GENERAL ANAESTHETICS**
- Analgesics: increased risk of renal impairment when ACE inhibitors given with **NSAIDS**, also hypotensive effect antagonised
- Angiotensin-II Receptor Antagonists: increased risk of hyperkalaemia, hypotension, and impaired renal function when ACE inhibitors given with ● **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**—avoid concomitant use
- Antacids: absorption of ACE inhibitors possibly reduced by **ANTACIDS**; absorption of captopril, enalapril and fosinopril reduced by **ANTACIDS**
- Antibacterials: plasma concentration of active metabolite of imidapril reduced by **RIFAMPICIN** (reduced antihypertensive effect); quinapril tablets reduce absorption of **TETRACYCLINES** (quinapril tablets contain magnesium carbonate); possible increased risk of hyperkalaemia when ACE inhibitors given with **TRIMETHOPRIM**
- Anticoagulants: increased risk of hyperkalaemia when ACE inhibitors given with **HEPARINS**
- ACE Inhibitors** (continued)
  - Antidepressants: hypotensive effect of ACE inhibitors possibly enhanced by **MAOIS**
  - Antidiabetics: ACE inhibitors possibly enhance hypoglycaemic effect of **INSULIN**, **METFORMIN** and **SULFONYLUREAS**
  - Antipsychotics: enhanced hypotensive effect when ACE inhibitors given with **ANTIPSYCHOTICS**
  - Anxiolytics and Hypnotics: enhanced hypotensive effect when ACE inhibitors given with **ANXIOLYTICS** and **HYPNOTICS**
  - Avanafil: hypotensive effect of enalapril possibly enhanced by **AVANAFIL**
  - Azathioprine: increased risk of anaemia or leucopenia when captopril given with **AZATHIOPRINE** especially in renal impairment; increased risk of anaemia when enalapril given with **AZATHIOPRINE** especially in renal impairment
  - Bee Venom Extracts: possible severe anaphylactoid reaction when ACE inhibitors given with ● **BEE VENOM EXTRACTS**
  - Beta-blockers: enhanced hypotensive effect when ACE inhibitors given with **BETA-BLOCKERS**
  - Calcium-channel Blockers: enhanced hypotensive effect when ACE inhibitors given with **CALCIUM-CHANNEL BLOCKERS**
  - Cardiac Glycosides: captopril possibly increases plasma concentration of **DIGOXIN**
  - Ciclosporin: increased risk of hyperkalaemia when ACE inhibitors given with ● **CICLOSPORIN**
  - Clonidine: enhanced hypotensive effect when ACE inhibitors given with **CLONIDINE**; antihypertensive effect of captopril possibly delayed by previous treatment with **CLONIDINE**
  - Corticosteroids: hypotensive effect of ACE inhibitors antagonised by **CORTICOSTEROIDS**
  - Cytotoxics: increased risk of angioedema when ACE inhibitors given with ● **EVEROLIMUS**
  - Diazoxide: enhanced hypotensive effect when ACE inhibitors given with **DIAZOXIDE**
  - Diuretics: enhanced hypotensive effect when ACE inhibitors given with ● **DIURETICS**; increased risk of severe hyperkalaemia when ACE inhibitors given with ● **POTASSIUM-SPARING DIURETICS** and **ALDOSTERONE ANTAGONISTS**
  - Dopaminergics: enhanced hypotensive effect when ACE inhibitors given with **CO-BENELDOPA**, **CO-CARELDOPA** or **LEVODOPA**
  - Lithium: ACE inhibitors reduce excretion of ● **LITHIUM** (increased plasma concentration)
  - Methyldopa: enhanced hypotensive effect when ACE inhibitors given with **METHYLDOPA**
  - Moxisylyte: enhanced hypotensive effect when ACE inhibitors given with **MOXISYLYTE**
  - Moxonidine: enhanced hypotensive effect when ACE inhibitors given with **MOXONIDINE**
  - Muscle Relaxants: enhanced hypotensive effect when ACE inhibitors given with **BACLOFEN** or **TIZANIDINE**
  - Nitrates: enhanced hypotensive effect when ACE inhibitors given with **NITRATES**
  - Oestrogens: hypotensive effect of ACE inhibitors antagonised by **OESTROGENS**
  - Potassium Salts: increased risk of severe hyperkalaemia when ACE inhibitors given with ● **POTASSIUM SALTS**
  - Prostaglandins: enhanced hypotensive effect when ACE inhibitors given with **ALPROSTADIL**
  - Sodium Aurothiomalate: flushing and hypotension reported when ACE inhibitors given with ● **SODIUM AUROTTHIOMALATE**
  - Vasodilator Antihypertensives: enhanced hypotensive effect when ACE inhibitors given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**
  - Wasp Venom Extracts: possible severe anaphylactoid reaction when ACE inhibitors given with ● **WASP VENOM EXTRACTS**

**Acebutolol** see Beta-blockers

**Aceclofenac** see NSAIDs

**Acemetacin** see NSAIDs

**Acenocoumarol** see Coumarins

**Acetazolamide** see Diuretics

### Aciclovir

**NOTE** Interactions do not apply to topical aciclovir preparations

- Aminophylline: aciclovir possibly increases plasma concentration of **AMINOPHYLLINE**

**Aciclovir** (continued)

- Ciclosporin: increased risk of nephrotoxicity when aciclovir given with **CYCLOSPORIN**
- Mycophenolate: plasma concentration of aciclovir increased by **MYCOPHENOLATE**, also plasma concentration of inactive metabolite of mycophenolate increased
- Tacrolimus: possible increased risk of nephrotoxicity when aciclovir given with **TACROLIMUS**
- Theophylline: aciclovir possibly increases plasma concentration of **THEOPHYLLINE**

**Acitretin** see Retinoids**Acidiniium** see Antimuscarinics**Acrivastine** see Antihistamines**Adalimumab**

- Abatacept: increased risk of side-effects when adalimumab given with **ABATACEPT**
- Anakinra: avoid concomitant use of adalimumab with
  - **ANAKINRA**
- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)
- Vaccines: risk of generalised infections when monoclonal antibodies given with live ● **VACCINES**—avoid concomitant use

**Adefovir**

- Antivirals: manufacturer of adefovir advised by manufacturer of **TENOFOVIR**
- Interferons: manufacturer of adefovir advises caution with **PEGINTERFERON ALFA**

**Adenosine**

- NOTE** Possibility of interaction with drugs tending to impair myocardial conduction
- Aminophylline: anti-arrhythmic effect of adenosine antagonised by **AMINOPHYLLINE**—manufacturer of adenosine advises avoid aminophylline for 24 hours before adenosine
  - Anaesthetics, Local: increased myocardial depression when anti-arrhythmics given with **BUPIVACAINE**, **LEVOBUPIVACAINE**, **PRILCACAINE** or **ROPIVACAINE**
  - Anti-arrhythmics: increased myocardial depression when anti-arrhythmics given with other ● **ANTI-ARRHYTHMICS**
  - Antipsychotics: increased risk of ventricular arrhythmias when anti-arrhythmics that prolong the QT interval given with ● **ANTI-PSYCHOTICS** that prolong the QT interval
  - Beta-blockers: increased myocardial depression when anti-arrhythmics given with ● **BETA-BLOCKERS**
  - Caffeine citrate: anti-arrhythmic effect of adenosine antagonised by **CAFFEINE CITRATE**—manufacturer of adenosine advises avoid caffeine citrate for at least 12 hours before adenosine
  - Dipyrindamole: effect of adenosine enhanced and extended by ● **DIPYRIDAMOLE** (important risk of toxicity)—reduce dose of adenosine, see p. 87
  - Nicotine: effects of adenosine possibly enhanced by **NICOTINE**
  - Theophylline: anti-arrhythmic effect of adenosine antagonised by **THEOPHYLLINE**—manufacturer of adenosine advises avoid theophylline for 24 hours before adenosine

**Adrenaline (epinephrine)** see Sympathomimetics**Adrenergic Neurone Blockers**

- Alcohol: enhanced hypotensive effect when adrenergic neurone blockers given with **ALCOHOL**
- Alpha-blockers: enhanced hypotensive effect when adrenergic neurone blockers given with **ALPHA-BLOCKERS**
- Anaesthetics, General: enhanced hypotensive effect when adrenergic neurone blockers given with ● **GENERAL ANAESTHETICS**
- Analgesics: hypotensive effect of adrenergic neurone blockers antagonised by **NSAIDS**
- Angiotensin-II Receptor Antagonists: enhanced hypotensive effect when adrenergic neurone blockers given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- Antidepressants: enhanced hypotensive effect when adrenergic neurone blockers given with **MAOIS**; hypotensive effect of adrenergic neurone blockers antagonised by **TRICYCLICS**
- Antipsychotics: hypotensive effect of adrenergic neurone blockers antagonised by **HALOPERIDOL**; hypotensive effect of adrenergic neurone blockers antagonised by higher doses of

**Adrenergic Neurone Blockers****Antipsychotics** (continued)

- **CHLORPROPAMINE**; enhanced hypotensive effect when adrenergic neurone blockers given with **PHENOTHIAZINES**
- Anxiolytics and Hypnotics: enhanced hypotensive effect when adrenergic neurone blockers given with **ANXIOLYTICS AND HYPNOTICS**
- Beta-blockers: enhanced hypotensive effect when adrenergic neurone blockers given with **BETA-BLOCKERS**
- Calcium-channel Blockers: enhanced hypotensive effect when adrenergic neurone blockers given with **CALCIUM-CHANNEL BLOCKERS**
- Clonidine: enhanced hypotensive effect when adrenergic neurone blockers given with **CLONIDINE**
- Corticosteroids: hypotensive effect of adrenergic neurone blockers antagonised by **CORTICOSTEROIDS**
- Diazoxide: enhanced hypotensive effect when adrenergic neurone blockers given with **DIAZOXIDE**
- Diuretics: enhanced hypotensive effect when adrenergic neurone blockers given with **DIURETICS**
- Dopaminergics: enhanced hypotensive effect when adrenergic neurone blockers given with **CO-BENELDOPA**, **CO-CARELDOPA** or **LEVODOPA**
- Methyldopa: enhanced hypotensive effect when adrenergic neurone blockers given with **METHYLDOPA**
- Moxisylyte: enhanced hypotensive effect when adrenergic neurone blockers given with **MOXISYLYTE**
- Moxonidine: enhanced hypotensive effect when adrenergic neurone blockers given with **MOXONIDINE**
- Muscle Relaxants: enhanced hypotensive effect when adrenergic neurone blockers given with **BACLOFEN** or **TIZANIDINE**
- Nitrates: enhanced hypotensive effect when adrenergic neurone blockers given with **NITRATES**
- Oestrogens: hypotensive effect of adrenergic neurone blockers antagonised by **OESTROGENS**
- Pizotifen: hypotensive effect of adrenergic neurone blockers antagonised by **PIZOTIFEN**
- Prostaglandins: enhanced hypotensive effect when adrenergic neurone blockers given with **ALPROSTADIL**
- Sympathomimetics: increased risk of hypertension when guanethidine given with ● **ADRENALINE (EPINEPHRINE)**; hypotensive effect of guanethidine antagonised by ● **DEXAMFETAMINE** and ● **LISDEXAMFETAMINE**; hypotensive effect of adrenergic neurone blockers antagonised by ● **EPHEDRINE**, ● **ISOMETHEPTENE**, ● **METARAMINOL**, ● **METHYLPHENIDATE**, ● **NORADRENALINE (NOREPINEPHRINE)**, ● **OXYMETAZOLINE**, ● **PHENYLEPHRINE**, ● **SEUDOEPHEDRINE** and ● **XYLOMETAZOLINE**
- Vasodilator Antihypertensives: enhanced hypotensive effect when adrenergic neurone blockers given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**

**Adsorbents** see Kaolin**Afatinib**

- Anti-arrhythmics: plasma concentration of afatinib possibly increased by **AMIODARONE**—manufacturer of afatinib advises separating administration of amiodarone by 6 to 12 hours
- Antibacterials: plasma concentration of afatinib possibly increased by **ERYTHROMYCIN**—manufacturer of afatinib advises separating administration of erythromycin by 6 to 12 hours; plasma concentration of afatinib reduced by **RIFAMPICIN**
- Antifungals: plasma concentration of afatinib possibly increased by **ITRACONAZOLE** and **KETOCONAZOLE**—manufacturer of afatinib advises separating administration of itraconazole and ketoconazole by 6 to 12 hours
- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)
- Antivirals: plasma concentration of afatinib increased by **RITONAVIR**—manufacturer of afatinib advises separating administration of ritonavir by 6 to 12 hours; plasma concentration of afatinib possibly increased by **SAQUINAVIR**—manufacturer of afatinib advises separating administration of saquinavir by 6 to 12 hours
- Calcium-channel Blockers: plasma concentration of afatinib possibly increased by **VERAPAMIL**—manufacturer of afatinib advises separating administration of verapamil by 6 to 12 hours

**Afatinib** (continued)

- ▷ Ciclosporin: plasma concentration of afatinib possibly increased by **CICLOSPORIN**—manufacturer of afatinib advises separating administration of ciclosporin by 6 to 12 hours
- ▷ Tacrolimus: plasma concentration of afatinib possibly increased by **TACROLIMUS**—manufacturer of afatinib advises separating administration of tacrolimus by 6 to 12 hours

**Agalsidase Alfa and Beta**

- ▷ Anti-arrhythmics: effects of agalsidase alfa and beta possibly inhibited by **AMIODARONE** (manufacturers of agalsidase alfa and beta advise avoid concomitant use)
- ▷ Antibacterials: effects of agalsidase alfa and beta possibly inhibited by **GENTAMICIN** (manufacturers of agalsidase alfa and beta advise avoid concomitant use)
- ▷ Antimalarials: effects of agalsidase alfa and beta possibly inhibited by **CHLOROQUINE** and **HYDROXYCHLOROQUINE** (manufacturers of agalsidase alfa and beta advise avoid concomitant use)

**Agomelatine**

- Antibacterials: manufacturer of agomelatine advises avoid concomitant use with ● **CIPROFLOXACIN**
- Antidepressants: metabolism of agomelatine inhibited by ● **FLUVOXAMINE** (increased plasma concentration)
- Antimalarials: avoidance of antidepressants advised by manufacturer of ● **ARTEMETHER WITH LUMEFANTRINE** and ● **ARTENIMOL WITH PIPERAQUINE**
- ▷ Atomoxetine: possible increased risk of convulsions when antidepressants given with **ATOMOXETINE**

**Albendazole**

- ▷ Anthelmintics: plasma concentration of both drugs possibly reduced when albendazole given with **LEVAMISOLE**
- Antiepileptics: plasma concentration of albendazole reduced by ● **CARBAMAZEPINE**, ● **FOSPHENYTOIN**, ● **PHENOBARBITAL**, ● **PHENYTOIN** and ● **PRIMIDONE**—consider increasing albendazole dose when given for systemic infections
- Antivirals: plasma concentration of active metabolite of albendazole reduced by ● **RITONAVIR**—consider increasing albendazole dose when given for systemic infections
- ▷ Corticosteroids: plasma concentration of active metabolite of albendazole increased by **DEXAMETHASONE**
- ▷ Grapefruit Juice: plasma concentration of active metabolite of albendazole increased by **GRAPEFRUIT JUICE**
- ▷ Ulcer-healing Drugs: effects of albendazole possibly enhanced by **CIMETIDINE**

**Alcohol**

- ▷ ACE Inhibitors: enhanced hypotensive effect when alcohol given with **ACE INHIBITORS**
- ▷ Adrenergic Neurone Blockers: enhanced hypotensive effect when alcohol given with **ADRENERGIC NEURONE BLOCKERS**
- ▷ Alpha-blockers: increased sedative effect when alcohol given with **INDORAMIN**; enhanced hypotensive effect when alcohol given with **ALPHA-BLOCKERS**
- ▷ Analgesics: enhanced hypotensive and sedative effects when alcohol given with **OPIOID ANALGESICS**
- ▷ Angiotensin-II Receptor Antagonists: enhanced hypotensive effect when alcohol given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- ▷ Anthelmintics: possibility of disulfiram-like reaction when alcohol given with **LEVAMISOLE**
- Antibacterials: disulfiram-like reaction when alcohol given with **METRONIDAZOLE**; possibility of disulfiram-like reaction when alcohol given with **TINIDAZOLE**; increased risk of convulsions when alcohol given with ● **CYCLOSERINE**
- Anticoagulants: major changes in consumption of alcohol may affect anticoagulant control with ● **COUMARINS** or ● **PHENINDIONE**
- Antidepressants: some beverages containing alcohol and some dealcoholised beverages contain tyramine which interacts with ● **MAOIS** (hypertensive crisis)—if no tyramine, enhanced hypotensive effect; sedative effects possibly increased when alcohol given with **SSRIs**; increased sedative effect when alcohol given with ● **MIRTAZAPINE**, and **TRICYCLIC-RELATED ANTIDEPRESSANTS** of ● **TRICYCLICS**
- ▷ Antidiabetics: alcohol enhances hypoglycaemic effect of **ANTIDIABETICS**; increased risk of lactic acidosis when alcohol given with **METFORMIN**

**Alcohol** (continued)

- ▷ Antiepileptics: alcohol possibly increases CNS side-effects of **CARBAMAZEPINE**; chronic heavy consumption of alcohol possibly reduces plasma concentration of **FOSPHENYTOIN** and **PHENYTOIN**; increased sedative effect when alcohol given with **PHENOBARBITAL** or **PRIMIDONE**; increased risk of blurred vision when alcohol given with **RETIGABINE**
- ▷ Antifungals: possibility of disulfiram-like reaction when alcohol given with **KETOCONAZOLE**; effects of alcohol possibly enhanced by **GRISEOFULVIN**
- ▷ Antihistamines: increased sedative effect when alcohol given with **ANTIHISTAMINES** (possibly less effect with non-sedating antihistamines)
- ▷ Antimuscarinics: increased sedative effect when alcohol given with **HYOSCINE**
- ▷ Antipsychotics: increased sedative effect when alcohol given with **ANTIPSYCHOTICS**
- ▷ Anxiolytics and Hypnotics: increased sedative effect when alcohol given with **ANXIOLYTICS** and **HYPNOTICS**
- ▷ Avanafil: possible enhanced hypotensive effect when alcohol given with **AVANAFIL**
- ▷ Beta-blockers: enhanced hypotensive effect when alcohol given with **BETA-BLOCKERS**
- ▷ Calcium-channel Blockers: enhanced hypotensive effect when alcohol given with **CALCIUM-CHANNEL BLOCKERS**; plasma concentration of alcohol possibly increased by **VERAPAMIL**
- ▷ Clonidine: enhanced hypotensive effect when alcohol given with **CLONIDINE**
- Cytotoxics: disulfiram-like reaction when alcohol given with **PROCARBAZINE**; avoidance of alcohol advised by manufacturer of ● **TRABECTEDIN**
- Dapoxetine: increased sedative effect when alcohol given with ● **DAPOXETINE**
- ▷ Diazoxide: enhanced hypotensive effect when alcohol given with **DIAZOXIDE**
- ▷ Disulfiram: disulfiram reaction when alcohol given with **DISULFIRAM**
- ▷ Diuretics: enhanced hypotensive effect when alcohol given with **DIURETICS**
- ▷ Dopaminergics: alcohol reduces tolerance to **BROMOCRIPTINE**
- ▷ Lipid-regulating Drugs: avoidance of alcohol advised by manufacturer of **LOMITAPIDE**
- ▷ Lofexidine: increased sedative effect when alcohol given with **LOFEXIDINE**
- ▷ Methyldopa: enhanced hypotensive effect when alcohol given with **METHYLDOPA**
- ▷ Metoclopramide: absorption of alcohol possibly increased by **METOCLOPRAMIDE**
- ▷ Moxonidine: enhanced hypotensive effect when alcohol given with **MOXONIDINE**
- ▷ Muscle Relaxants: increased sedative effect when alcohol given with **BACLOFEN**, **METHOCARBAMOL** or **TIZANIDINE**
- ▷ Nicorandil: alcohol possibly enhances hypotensive effect of **NICORANDIL**
- ▷ Nitrates: enhanced hypotensive effect when alcohol given with **NITRATES**
- Paraldehyde: increased sedative effect when alcohol given with ● **PARALDEHYDE**
- Retinoids: presence of alcohol causes tretinate to be formed from ● **ACITRETIN** (increased risk of teratogenicity in women of child-bearing potential)
- ▷ Sympathomimetics: alcohol possibly enhances effects of **METHYLPHENIDATE**
- ▷ Vasodilator Antihypertensives: enhanced hypotensive effect when alcohol given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**

**Aldesleukin**

- ▷ ACE Inhibitors: enhanced hypotensive effect when aldesleukin given with **ACE INHIBITORS**
- ▷ Alpha-blockers: enhanced hypotensive effect when aldesleukin given with **ALPHA-BLOCKERS**
- ▷ Angiotensin-II Receptor Antagonists: enhanced hypotensive effect when aldesleukin given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- ▷ Antivirals: aldesleukin possibly increases plasma concentration of **INDINAVIR**

**Aldesleukin** (continued)

- Beta-blockers: enhanced hypotensive effect when aldesleukin given with **BETA-BLOCKERS**
- Calcium-channel Blockers: enhanced hypotensive effect when aldesleukin given with **CALCIUM-CHANNEL BLOCKERS**
- Clonidine: enhanced hypotensive effect when aldesleukin given with **CLONIDINE**
- Corticosteroids: manufacturer of aldesleukin advises avoid concomitant use with ● **CORTICOSTEROIDS**
- Cytotoxics: manufacturer of aldesleukin advises avoid concomitant use with ● **CISPLATIN**, ● **DACARBAZINE** and ● **VINBLASTINE**
- Diazoxide: enhanced hypotensive effect when aldesleukin given with **DIAZOXIDE**
- Diuretics: enhanced hypotensive effect when aldesleukin given with **DIURETICS**
- Methyldopa: enhanced hypotensive effect when aldesleukin given with **METHYLDOPA**
- Moxonidine: enhanced hypotensive effect when aldesleukin given with **MOXONIDINE**
- Nitrates: enhanced hypotensive effect when aldesleukin given with **NITRATES**
- Vasodilator Antihypertensives: enhanced hypotensive effect when aldesleukin given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**

**Alemtuzumab**

- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Vaccines: risk of generalised infections when monoclonal antibodies given with live ● **VACCINES**—avoid concomitant use

**Alemdronic Acid** see Bisphosphonates**Alfacalcidol** see Vitamins**Alfentanil** see Opioid Analgesics**Alfuzosin** see Alpha-blockers**Alimemazine** see Antihistamines**Aliskiren**

- ACE Inhibitors: increased risk of hyperkalaemia, hypotension, and impaired renal function when aliskiren given with ● **ACE INHIBITORS**—avoid concomitant use
- Analgesics: hypotensive effect of aliskiren possibly antagonised by **NSAIDS**
- Angiotensin-II Receptor Antagonists: increased risk of hyperkalaemia, hypotension, and impaired renal function when aliskiren given with ● **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**—avoid concomitant use; plasma concentration of aliskiren possibly reduced by **IRBESARTAN**
- Antibacterials: plasma concentration of aliskiren reduced by **RIFAMPICIN**
- Anticoagulants: increased risk of hyperkalaemia when aliskiren given with **HEPARINS**
- Antifungals: plasma concentration of aliskiren increased by ● **ITRACONAZOLE**; plasma concentration of aliskiren increased by ● **ITRACONAZOLE**—avoid concomitant use
- Calcium-channel Blockers: plasma concentration of aliskiren increased by **VERAPAMIL**
- Ciclosporin: plasma concentration of aliskiren increased by ● **CICLOSPORIN**—avoid concomitant use
- Diuretics: aliskiren reduces plasma concentration of **FUROSEMIDE**; increased risk of hyperkalaemia when aliskiren given with **POTASSIUM-SPARING DIURETICS** AND **ALDOSTERONE ANTAGONISTS**
- Grapefruit Juice: plasma concentration of aliskiren reduced by ● **GRAPEFRUIT JUICE**—avoid concomitant use
- Potassium Salts: increased risk of hyperkalaemia when aliskiren given with **POTASSIUM SALTS**

**Alitretinoin** see Retinoids**Alkylating Drugs** see Bendamustine, Busulfan, Carmustine, Cyclophosphamide, Estramustine, Ifosfamide, Lomustine, Melphalan, and Thiotepa**Allopurinol**

- ACE Inhibitors: manufacturers state possible increased risk of leucopenia and hypersensitivity reactions when allopurinol given with **ACE INHIBITORS** especially in renal impairment
- Aminophylline: allopurinol possibly increases plasma concentration of **AMINOPHYLLINE**

**Allopurinol** (continued)

- Antibacterials: increased risk of rash when allopurinol given with **AMOXICILLIN**, **AMPICILLIN** or **CO-AMOXICLAV**
- Anticoagulants: allopurinol possibly enhances anticoagulant effect of **COUMARINS**
- Antivirals: allopurinol increases plasma concentration of ● **DIDANOSINE** (risk of toxicity)—avoid concomitant use
- Azathioprine: allopurinol enhances effects and increases toxicity of ● **AZATHIOPRINE** (reduce dose of azathioprine to one quarter of usual dose)
- Ciclosporin: allopurinol possibly increases plasma concentration of **CICLOSPORIN** (risk of nephrotoxicity)
- Cytotoxics: avoidance of allopurinol advised by manufacturer of ● **CAPECITABINE**; allopurinol enhances effects and increases toxicity of ● **MERCAPTOPURINE** (reduce dose of mercaptopurine to one quarter of usual dose)
- Diuretics: increased risk of hypersensitivity when allopurinol given with **THIAZIDES AND RELATED DIURETICS** especially in renal impairment
- Theophylline: allopurinol possibly increases plasma concentration of **THEOPHYLLINE**

**Almotriptan** see 5HT<sub>1</sub>-receptor Agonists (under HT)**Alogliptin** see Antidiabetics**Alpha<sub>2</sub>-adrenoceptor Stimulants** see Apraclonidine, Brimonidine, Clonidine, and Methyldopa**Alpha-blockers**

- ACE Inhibitors: enhanced hypotensive effect when alpha-blockers given with **ACE INHIBITORS**
- Adrenergic Neurone Blockers: enhanced hypotensive effect when alpha-blockers given with **ADRENERGIC NEURONE BLOCKERS**
- Alcohol: enhanced hypotensive effect when alpha-blockers given with **ALCOHOL**; increased sedative effect when indoramin given with **ALCOHOL**
- Aldesleukin: enhanced hypotensive effect when alpha-blockers given with **ALDESLEUKIN**
- Anaesthetics, General: enhanced hypotensive effect when alpha-blockers given with ● **GENERAL ANAESTHETICS**
- Analgesics: hypotensive effect of alpha-blockers antagonised by **NSAIDS**
- Angiotensin-II Receptor Antagonists: enhanced hypotensive effect when alpha-blockers given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- Antidepressants: manufacturer of indoramin advises avoid concomitant use with ● **MAOIS**; enhanced hypotensive effect when alpha-blockers given with **MAOIS**
- Antifungals: plasma concentration of alfuzosin possibly increased by **KETOCONAZOLE**; plasma concentration of tamsulosin increased by ● **KETOCONAZOLE**
- Antipsychotics: enhanced hypotensive effect when alpha-blockers given with **ANTIPSYCHOTICS**
- Antivirals: plasma concentration of doxazosin and tamsulosin possibly increased by **BOCEPREVIR**—manufacturer of boceprevir advises avoid concomitant use; plasma concentration of alfuzosin possibly increased by ● **RITONAVIR**—avoid concomitant use; avoidance of alfuzosin advised by manufacturer of ● **TELAPREVIR**
- Anxiolytics and Hypnotics: enhanced hypotensive and sedative effects when alpha-blockers given with **ANXIOLYTICS AND HYPNOTICS**
- Avanafil: enhanced hypotensive effect when alpha-blockers given with ● **AVANAFIL**—when patient is stable on the alpha blocker initiate avanafil at the lowest possible dose
- Beta-blockers: enhanced hypotensive effect when alpha-blockers given with ● **BETA-BLOCKERS**, also increased risk of first-dose hypotension with post-synaptic alpha-blockers such as prazosin
- Calcium-channel Blockers: enhanced hypotensive effect when alpha-blockers given with ● **CALCIUM-CHANNEL BLOCKERS**, also increased risk of first-dose hypotension with post-synaptic alpha-blockers such as prazosin; plasma concentration of tamsulosin increased by **VERAPAMIL**
- Cardiac Glycosides: prazosin increases plasma concentration of **DIGOXIN**
- Clonidine: enhanced hypotensive effect when alpha-blockers given with **CLONIDINE**



**Alpha-blockers** (continued)

- Cobicistat: plasma concentration of alfuzosin possibly increased by ● **COBICISTAT**—manufacturer of cobicistat advises avoid concomitant use
- ▶ Corticosteroids: hypotensive effect of alpha-blockers antagonised by **CORTICOSTEROIDS**
- ▶ Cytotoxics: avoidance of alfuzosin advised by manufacturer of **IDELALISIB**
- ▶ Diazoxide: enhanced hypotensive effect when alpha-blockers given with **DIAZOXIDE**
- Diuretics: enhanced hypotensive effect when alpha-blockers given with ● **DIURETICS**, also increased risk of first-dose hypotension with post-synaptic alpha-blockers such as prazosin
- ▶ Dopaminergics: enhanced hypotensive effect when alpha-blockers given with **CO-BENELDOPA**, **CO-CARELDOPA** or **LEVODOPA**
- ▶ Methyldopa: enhanced hypotensive effect when alpha-blockers given with **METHYLDOPA**
- Moxislyte: possible severe postural hypotension when alpha-blockers given with ● **MOXISLYTE**
- ▶ Moxonidine: enhanced hypotensive effect when alpha-blockers given with **MOXONIDINE**
- ▶ Muscle Relaxants: enhanced hypotensive effect when alpha-blockers given with **BACLOFEN** or **TIZANIDINE**
- ▶ Nitrates: enhanced hypotensive effect when alpha-blockers given with **NITRATES**
- ▶ Oestrogens: hypotensive effect of alpha-blockers antagonised by **OESTROGENS**
- ▶ Prostaglandins: enhanced hypotensive effect when alpha-blockers given with **ALPROSTADIL**
- Sildenafil: enhanced hypotensive effect when alpha-blockers given with ● **SILDENAFIL** (avoid alpha-blockers for 4 hours after sildenafil)—when patient is stable on the alpha blocker initiate sildenafil at the lowest possible dose
- Sympathomimetics: avoid concomitant use of tolazoline with ● **ADRENALINE (EPINEPHRINE)** or ● **DOPAMINE**
- Tadalafil: enhanced hypotensive effect when alpha-blockers given with ● **TADALAFIL**—when patient is stable on the alpha blocker initiate tadalafil at the lowest possible dose; enhanced hypotensive effect when doxazosin given with ● **TADALAFIL**—manufacturer of tadalafil advises avoid concomitant use
- Ulcer-healing Drugs: effects of tolazoline antagonised by ● **CIMETIDINE** and ● **RANITIDINE**
- Vardenafil: enhanced hypotensive effect when alpha-blockers given with ● **VARDENAFIL**—when patient is stable on the alpha blocker initiate vardenafil at the lowest possible dose—separate doses by 6 hours (except with tamsulosin)
- ▶ Vasodilator Antihypertensives: enhanced hypotensive effect when alpha-blockers given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**

**Alpha-blockers (post-synaptic)** see Alpha-blockers

**Alprazolam** see Anxiolytics and Hypnotics

**Alprostadil** see Prostaglandins

**Aluminium Hydroxide** see Antacids

**Amantadine**

- ▶ Anticholinergics: plasma concentration of amantadine possibly increased by **QUININE**
- ▶ Antipsychotics: increased risk of extrapyramidal side-effects when amantadine given with **ANTI-PSYCHOTICS**
- ▶ Bupropion: increased risk of side-effects when amantadine given with **BUPROPION**
- Memantine: increased risk of CNS toxicity when amantadine given with ● **MEMANTINE** (manufacturer of memantine advises avoid concomitant use); effects of dopaminergics possibly enhanced by **MEMANTINE**
- ▶ Methyldopa: increased risk of extrapyramidal side-effects when amantadine given with **METHYLDOPA**; antiparkinsonian effect of dopaminergics antagonised by **METHYLDOPA**
- ▶ Tetrabenazine: increased risk of extrapyramidal side-effects when amantadine given with **TETRABENAZINE**

**Ambrisentan**

- ▶ Antibacterials: plasma concentration of ambrisentan possibly increased by **RIFAMPICIN**

**Ambrisentan** (continued)

- Ciclosporin: plasma concentration of ambrisentan increased by ● **CICLOSPORIN** (see under Ambrisentan, p. 162)

**Amikacin** see Aminoglycosides

**Amiloride** see Diuretics

**Aminoglycosides**

- ▶ Agalsidase Alfa and Beta: gentamicin possibly inhibits effects of **AGALSIDASE ALFA AND BETA** (manufacturers of agalsidase alfa and beta advise avoid concomitant use)
  - ▶ Analgesics: plasma concentration of amikacin and gentamicin in neonates possibly increased by **INDOMETACIN**
  - Antibacterials: neomycin reduces absorption of **PHENOXYMETHYLPENICILLIN**; increased risk of nephrotoxicity when aminoglycosides given with **COLISTIMETHATE SODIUM** or **POLYMYXINS**; increased risk of nephrotoxicity and ototoxicity when aminoglycosides given with **CAPREOMYCIN** or ● **VANCOMYCIN**; possible increased risk of nephrotoxicity when aminoglycosides given with **CEPHALOSPORINS**
  - Anticoagulants: experience in anticoagulant clinics suggests that INR possibly altered when neomycin (given for local action on gut) is given with ● **COUMARINS** or ● **PHENINDIONE**
  - ▶ Antidiabetics: neomycin possibly enhances hypoglycaemic effect of **ACARBOSE**, also severity of gastro-intestinal effects increased
  - ▶ Antifungals: increased risk of nephrotoxicity when aminoglycosides given with **AMPHOTERICIN**
  - ▶ Bisphosphonates: increased risk of hypocalcaemia when aminoglycosides given with **BISPHOSPHONATES**
  - ▶ Cardiac Glycosides: gentamicin possibly increases plasma concentration of **DIGOXIN**; neomycin reduces absorption of **DIGOXIN**
  - Ciclosporin: increased risk of nephrotoxicity when aminoglycosides given with ● **CICLOSPORIN**
  - Cytotoxics: neomycin possibly reduces absorption of **METHOTREXATE**; neomycin reduces bioavailability of **SORAFENIB**; increased risk of nephrotoxicity and possibly of ototoxicity when aminoglycosides given with ● **PLATINUM COMPOUNDS**
  - Diuretics: increased risk of ototoxicity when aminoglycosides given with ● **LOOP DIURETICS**
  - ▶ Mannitol: manufacturer of tobramycin advises avoid concomitant use with **MANNITOL**
  - Muscle Relaxants: aminoglycosides enhance effects of ● **NON-DEPOLARISING MUSCLE RELAXANTS** and ● **SUXAMETHONIUM**
  - Parasympathomimetics: aminoglycosides antagonise effects of ● **NEOSTIGMINE** and ● **PYRIDOSTIGMINE**
  - Tacrolimus: increased risk of nephrotoxicity when aminoglycosides given with ● **TACROLIMUS**
  - ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF
  - ▶ Vitamins: neomycin possibly reduces absorption of **VITAMIN A**
- Aminophylline**
- ▶ Allopurinol: plasma concentration of aminophylline possibly increased by **ALLOPURINOL**
  - ▶ Anaesthetics, General: increased risk of convulsions when aminophylline given with **KETAMINE**
  - ▶ Anti-arrhythmics: aminophylline antagonises anti-arrhythmic effect of **ADENOSINE**—manufacturer of adenosine advises avoid aminophylline for 24 hours before adenosine; plasma concentration of aminophylline increased by **PROPAFENONE**
  - Antibacterials: plasma concentration of aminophylline possibly increased by **CLARITHROMYCIN** and **ISONIAZID**; plasma concentration of aminophylline increased by ● **ERYTHROMYCIN** (also aminophylline may reduce absorption of *oral* erythromycin); plasma concentration of aminophylline increased by ● **CIPROFLOXACIN** and ● **NORFLOXACIN**; metabolism of aminophylline accelerated by **RIFAMPICIN** (reduced plasma concentration); possible increased risk of convulsions when aminophylline given with ● **QUINOLONES**
  - Antidepressants: plasma concentration of aminophylline increased by ● **FLUVOXAMINE** (concomitant use should usually be avoided, but where not possible halve aminophylline dose and monitor plasma-aminophylline concentration); plasma concentration of aminophylline possibly reduced by **ST JOHN'S WORT**

**Aminophylline** (continued)

- Antiepileptics: metabolism of aminophylline accelerated by **CARBAMAZEPINE**, **PHENOBARBITAL** and **PRIMIDONE** (reduced effect); plasma concentration of both drugs reduced when aminophylline given with **FOSPHENYTOIN** and **PHENYTOIN**
- Antifungals: plasma concentration of aminophylline possibly increased by **FLUCONAZOLE** and **KETOCONAZOLE**
- Antivirals: plasma concentration of aminophylline possibly increased by **ACICLOVIR** and **VALACICLOVIR**; metabolism of aminophylline accelerated by **RITONAVIR** (reduced plasma concentration)
- Anxiolytics and Hypnotics: aminophylline possibly reduces effects of **BENZODIAZEPINES**
- Caffeine citrate: avoidance of aminophylline advised by manufacturer of **CAFFEINE CITRATE**
- Calcium-channel Blockers: plasma concentration of aminophylline possibly increased by **CALCIUM-CHANNEL BLOCKERS** (enhanced effect); plasma concentration of aminophylline increased by **DILTIAZEM**; plasma concentration of aminophylline increased by **VERAPAMIL** (enhanced effect)
- Corticosteroids: increased risk of hypokalaemia when aminophylline given with **CORTICOSTEROIDS**
- Cytotoxics: plasma concentration of aminophylline possibly increased by **METHOTREXATE**
- Deferasirox: plasma concentration of aminophylline increased by **DEFERASIROX** (consider reducing dose of aminophylline)
- Disulfiram: metabolism of aminophylline inhibited by **DISULFIRAM** (increased risk of toxicity)
- Diuretics: increased risk of hypokalaemia when aminophylline given with **ACETAZOLAMIDE**, **LOOP DIURETICS** or **THIAZIDES AND RELATED DIURETICS**
- Doxapram: increased CNS stimulation when aminophylline given with **DOXAPRAM**
- Interferons: metabolism of aminophylline inhibited by **INTERFERON ALFA** and **PEGINTERFERON ALFA** (consider reducing dose of aminophylline)
- Leukotriene Receptor Antagonists: plasma concentration of aminophylline possibly increased by **ZAFIRLUKAST**, also plasma concentration of zafirlukast reduced
- Lithium: aminophylline increases excretion of **LITHIUM** (reduced plasma concentration)
- Oestrogens: plasma concentration of aminophylline increased by **OESTROGENS** (consider reducing dose of aminophylline)
- Pentoxifylline: plasma concentration of aminophylline increased by **PENTOXIFYLLINE**
- Roflumilast: avoidance of aminophylline advised by manufacturer of **ROFLUMILAST**
- Sulfipyrazone: plasma concentration of aminophylline reduced by **SULFINPYRAZONE**
- Sympathomimetics: manufacturer of aminophylline advises avoid concomitant use with **EPHEDRINE** in children
- Sympathomimetics, Beta<sub>2</sub>: increased risk of hypokalaemia when aminophylline given with high doses of **BETA<sub>2</sub> SYMPATHOMIMETICS**
- Ulcer-healing Drugs: metabolism of aminophylline inhibited by **CIMETIDINE** (increased plasma concentration); absorption of aminophylline possibly reduced by **SUCRALFATE** (give at least 2 hours apart)
- Vaccines: plasma concentration of aminophylline possibly increased by **INFLUENZA VACCINE**

**Aminosalicylates** see individual drugs

**Amiodarone**

- NOTE** Amiodarone has a long half-life; there is a potential for drug interactions to occur for several weeks (or even months) after treatment with it has been stopped
- Agalsidase Alfa and Beta: amiodarone possibly inhibits effects of **AGALSIDASE ALFA** and **BETA** (manufacturers of agalsidase alfa and beta advise avoid concomitant use)
  - Anaesthetics, Local: increased myocardial depression when anti-arrhythmics given with **BUPIVACAINE**, **LEVOBUPIVACAINE**, **PRILOCAINE** or **ROPIVACAINE**
  - Anti-arrhythmics: increased myocardial depression when anti-arrhythmics given with other **ANTI-ARRHYTHMICS**; increased risk of ventricular arrhythmias when amiodarone given with **DISOPYRAMIDE** or **DRONEDARONE**—avoid concomitant use;

**Amiodarone**

- Anti-arrhythmics (continued) amiodarone increases plasma concentration of **FLECAINIDE** (halve dose of flecainide)
- Antibacterials: increased risk of ventricular arrhythmias when amiodarone given with **parenteral** **ERYTHROMYCIN**—avoid concomitant use; increased risk of ventricular arrhythmias when amiodarone given with **LEVOFLOXACIN** or **MOXIFLOXACIN**—avoid concomitant use; possible increased risk of ventricular arrhythmias when amiodarone given with **SULFAMETHOXAZOLE** and **TRIMETHOPRIM** (as co-trimoxazole)—manufacturer of amiodarone advises avoid concomitant use of co-trimoxazole; increased risk of ventricular arrhythmias when amiodarone given with **DELAMANID**; avoidance of amiodarone advised by manufacturer of **FIDAXOMICIN**; possible increased risk of ventricular arrhythmias when amiodarone given with **TELITHROMYCIN**
- Anticoagulants: amiodarone inhibits metabolism of **COUMARINS** and **PHENINDIONE** (enhanced anticoagulant effect); amiodarone increases plasma concentration of **DABIGATRAN** (see under Dabigatran Etexilate, p. 117)
- Antidepressants: avoidance of amiodarone advised by manufacturer of **CITALOPRAM** and **ESCITALOPRAM** (risk of ventricular arrhythmias); increased risk of ventricular arrhythmias when amiodarone given with **TRICYCLICS**—avoid concomitant use
- Antiepileptics: amiodarone inhibits metabolism of **FOSPHENYTOIN** and **PHENYTOIN** (increased plasma concentration)
- Antihistamines: increased risk of ventricular arrhythmias when amiodarone given with **MIZOLASTINE**—avoid concomitant use
- Antimalarials: avoidance of amiodarone advised by manufacturer of **ARTEMETHER WITH LUMEFANTRINE** (risk of ventricular arrhythmias); avoidance of amiodarone advised by manufacturer of **ARTENIMOL WITH PIPERAQUINE** (possible risk of ventricular arrhythmias); increased risk of ventricular arrhythmias when amiodarone given with **CHLOROQUINE**, **HYDROXYCHLOROQUINE**, **MEFLOQUINE** or **QUININE**—avoid concomitant use
- Antimuscarinics: increased risk of ventricular arrhythmias when amiodarone given with **TOLTERODINE**
- Antipsychotics: increased risk of ventricular arrhythmias when anti-arrhythmics that prolong the QT interval given with **ANTIPSYCHOTICS** that prolong the QT interval; increased risk of ventricular arrhythmias when amiodarone given with **BENPERIDOL**—manufacturer of benperidol advises avoid concomitant use; increased risk of ventricular arrhythmias when amiodarone given with **AMISULPRIDE**, **DROPERIDOL**, **HALOPERIDOL**, **PHENOTHIAZINES**, **PIMOZIDE** or **ZUCLOPENTHIXOL**—avoid concomitant use; increased risk of ventricular arrhythmias when amiodarone given with **SULPRIDE**
- Antivirals: plasma concentration of amiodarone possibly increased by **ATAZANAVIR**; possible increased risk of bradycardia when amiodarone given with **DACLATASVIR** and **SIMEPREVIR** (with sofosbuvir)—see under Amiodarone, p. 88; plasma concentration of amiodarone possibly increased by **FOSAMPRENAVIR** (increased risk of ventricular arrhythmias—avoid concomitant use); plasma concentration of amiodarone possibly increased by **INDINAVIR**—avoid concomitant use; plasma concentration of amiodarone increased by **RITONAVIR** (increased risk of ventricular arrhythmias—avoid concomitant use); increased risk of ventricular arrhythmias when amiodarone given with **SAQUINAVIR**—avoid concomitant use; possible increased risk of bradycardia when amiodarone given with **SOFOSBUVIR**—see under Amiodarone, p. 88; avoidance of amiodarone advised by manufacturer of **TELAPREVIR** (risk of ventricular arrhythmias)
- Atomoxetine: increased risk of ventricular arrhythmias when amiodarone given with **ATOMOXETINE**
- Beta-blockers: increased risk of bradycardia, AV block and myocardial depression when amiodarone given with **BETA-BLOCKERS**; increased myocardial depression when anti-

**Amiodarone**

- Beta-blockers (continued)  
arrhythmics given with • **BETA-BLOCKERS**; increased risk of ventricular arrhythmias when amiodarone given with • **SOTALOL**—avoid concomitant use
- Calcium-channel Blockers: increased risk of bradycardia, AV block and myocardial depression when amiodarone given with • **DILTIAZEM** or • **VERAPAMIL**
- Cardiac Glycosides: amiodarone increases plasma concentration of • **DIGOXIN** (halve dose of digoxin)
- ▶ Ciclosporin: amiodarone possibly increases plasma concentration of **CICLOSPORIN**
- Cobicistat: plasma concentration of amiodarone possibly increased by • **COBICISTAT**—manufacturer of cobicistat advises avoid concomitant use
- Colchicine: amiodarone possibly increases risk of • **COLCHICINE** toxicity
- Cytotoxics: amiodarone possibly increases the plasma concentration of **AFATINIB**—manufacturer of afatinib advises separating administration of amiodarone by 6 to 12 hours; possible increased risk of ventricular arrhythmias when amiodarone given with • **BOSUTINIB**; amiodarone possibly increases the plasma concentration of • **IBRUTINIB**—reduce dose of ibrutinib (see under Ibrutinib, p. 809); avoidance of amiodarone advised by manufacturer of **IDELALISIB**; possible increased risk of ventricular arrhythmias when amiodarone given with • **VANDETANIB**—avoid concomitant use; increased risk of ventricular arrhythmias when amiodarone given with • **ARSENIC TRIOXIDE**
- ▶ Diuretics: increased cardiac toxicity with amiodarone if hypokalaemia occurs with **ACETAZOLAMIDE**, **LOOP DIURETICS** or **THIAZIDES AND RELATED DIURETICS**; amiodarone increases plasma concentration of **EPLERENONE** (reduce dose of eplerenone)
- Fingolimod: possible increased risk of bradycardia when amiodarone given with • **FINGOLIMOD**
- ▶ Grapefruit Juice: plasma concentration of amiodarone increased by **GRAPEFRUIT JUICE**
- Ivabradine: increased risk of ventricular arrhythmias when amiodarone given with • **IVABRADINE**
- Lipid-regulating Drugs: increased risk of myopathy when amiodarone given with • **SIMVASTATIN** (see under Simvastatin, p. 181); separating administration from amiodarone by 12 hours advised by manufacturer of **LOMITAPIDE**
- Lithium: manufacturer of amiodarone advises avoid concomitant use with • **LITHIUM** (risk of ventricular arrhythmias)
- ▶ Orlistat: plasma concentration of amiodarone possibly reduced by **ORLISTAT**
- Pentamidine Isetionate: increased risk of ventricular arrhythmias when amiodarone given with • **PENTAMIDINE ISETIONATE**—avoid concomitant use
- ▶ Thyroid Hormones: amiodarone can affect serum concentrations of **THYROID HORMONES**—monitor thyroid function closely
- ▶ Ulcer-healing Drugs: plasma concentration of amiodarone increased by **CIMETIDINE**

**Amisulpride** see Antipsychotics**Amisulpride** see Antidepressants, Tricyclic**Amiodipine** see Calcium-channel Blockers**Amoxicillin** see Penicillins**Amphotericin****NOTE** Close monitoring required with concomitant administration of nephrotoxic drugs or cytotoxics

- ▶ Antibacterials: increased risk of nephrotoxicity when amphotericin given with **AMINOGLYCOSIDES** or **POLYMYXINS**; possible increased risk of nephrotoxicity when amphotericin given with **VANCOMYCIN**
- ▶ Antifungals: amphotericin reduces renal excretion and increases cellular uptake of **FLUCYTOSINE** (toxicity possibly increased); effects of amphotericin possibly antagonised by **IMIDAZOLES** and **TRIAZOLES**; plasma concentration of amphotericin possibly increased by **MICAFUNGIN**
- Cardiac Glycosides: hypokalaemia caused by amphotericin increases cardiac toxicity with • **CARDIAC GLYCOSIDES**

**Amphotericin (continued)**

- Ciclosporin: increased risk of nephrotoxicity when amphotericin given with • **CICLOSPORIN**
- Corticosteroids: increased risk of hypokalaemia when amphotericin given with • **CORTICOSTEROIDS**—avoid concomitant use unless corticosteroids needed to control reactions
- Cytotoxics: increased risk of ventricular arrhythmias when amphotericin given with • **ARSENIC TRIOXIDE**
- ▶ Diuretics: increased risk of hypokalaemia when amphotericin given with **LOOP DIURETICS** or **THIAZIDES AND RELATED DIURETICS**
- ▶ Pentamidine Isetionate: possible increased risk of nephrotoxicity when amphotericin given with **PENTAMIDINE ISETIONATE**
- Sodium Stibogluconate: possible increased risk of arrhythmias when amphotericin given after • **SODIUM STIBOGLUCONATE**—manufacturer of sodium stibogluconate advises giving 14 days apart
- Tacrolimus: increased risk of nephrotoxicity when amphotericin given with • **TACROLIMUS**

**Ampicillin** see Penicillins**Anabolic Steroids**

- Anticoagulants: anabolic steroids enhance anticoagulant effect of • **COUMARINS** and • **PHENINDIONE**
- ▶ Antidiabetics: anabolic steroids possibly enhance hypoglycaemic effect of **ANTIDIABETICS**

**Anaesthetics, General****NOTE** See also Surgery and Long-term Medication, under General Anaesthesia in BNF

- ▶ ACE Inhibitors: enhanced hypotensive effect when general anaesthetics given with **ACE INHIBITORS**
- Adrenergic Neurone Blockers: enhanced hypotensive effect when general anaesthetics given with • **ADRENERGIC NEURONE BLOCKERS**
- Alpha-blockers: enhanced hypotensive effect when general anaesthetics given with • **ALPHA-BLOCKERS**
- ▶ Aminophylline: increased risk of convulsions when ketamine given with **AMINOPHYLLINE**
- ▶ Analgesics: metabolism of etomidate inhibited by **FENTANYL** (consider reducing dose of etomidate); effects of thiopental possibly enhanced by **ASPIRIN**; effects of intravenous general anaesthetics and volatile liquid general anaesthetics possibly enhanced by **OPIOID ANALGESICS**
- ▶ Angiotensin-II Receptor Antagonists: enhanced hypotensive effect when general anaesthetics given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- ▶ Antibacterials: increased risk of hepatotoxicity when isoflurane given with **ISONIAZID**; effects of thiopental enhanced by **SULFONAMIDES**; hypersensitivity-like reactions can occur when general anaesthetics given with **INTRAVENOUS VANCOMYCIN**
- ▶ Antidepressants: increased risk of arrhythmias and hypotension when general anaesthetics given with **TRICYCLICS**
- Antipsychotics: enhanced hypotensive effect when general anaesthetics given with • **ANTI-PSYCHOTICS**; effects of thiopental enhanced by **DROPERIDOL**
- ▶ Anxiolytics and Hypnotics: increased sedative effect when general anaesthetics given with **ANXIOLYTICS AND HYPNOTICS**
- ▶ Beta-blockers: enhanced hypotensive effect when general anaesthetics given with **BETA-BLOCKERS**
- Calcium-channel Blockers: enhanced hypotensive effect when general anaesthetics or isoflurane given with **CALCIUM-CHANNEL BLOCKERS**; general anaesthetics enhance hypotensive effect of • **VERAPAMIL** (also AV delay)
- ▶ Clonidine: enhanced hypotensive effect when general anaesthetics given with **CLONIDINE**
- Cytotoxics: nitrous oxide increases antifolate effect of • **METHOTREXATE**—avoid concomitant use
- ▶ Diazoxide: enhanced hypotensive effect when general anaesthetics given with **DIAZOXIDE**
- ▶ Diuretics: enhanced hypotensive effect when general anaesthetics given with **DIURETICS**
- Dopaminergics: increased risk of arrhythmias when volatile liquid general anaesthetics given with • **CO-BENELDOPA**, • **CO-CARELDOPA** or • **LEVODOPA**



**Anaesthetics, General** (continued)

- **Doxapram**: increased risk of arrhythmias when volatile liquid general anaesthetics given with **DOXAPRAM** (avoid doxapram for at least 10 minutes after volatile liquid general anaesthetics)
- **Memantine**: increased risk of CNS toxicity when ketamine given with **MEMANTINE** (manufacturer of memantine advises avoid concomitant use)
- ▶ **Methyldopa**: enhanced hypotensive effect when general anaesthetics given with **METHYLDOPA**
- ▶ **Metoclopramide**: effects of thiopental enhanced by **METOCLOPRAMIDE**
- ▶ **Moxonidine**: enhanced hypotensive effect when general anaesthetics given with **MOXONIDINE**
- **Muscle Relaxants**: increased risk of myocardial depression and bradycardia when propofol given with **SUXAMETHONIUM**; volatile liquid general anaesthetics enhance effects of **NON-DEPOLARISING MUSCLE RELAXANTS** and **SUXAMETHONIUM**; ketamine enhances effects of **ATRACURIUM**
- ▶ **Nitrates**: enhanced hypotensive effect when general anaesthetics given with **NITRATES**
- ▶ **Oxytocin**: oxytocic effect possibly reduced, also enhanced hypotensive effect and risk of arrhythmias when volatile liquid general anaesthetics given with **OXYTOCIN**
- **Sympathomimetics**: manufacturer of isoflurane advises avoid concomitant use with **SYMPATHOMIMETICS** (risk of ventricular arrhythmias); increased risk of arrhythmias when volatile liquid general anaesthetics given with **ADRENALINE (EPINEPHRINE)** or **NORADRENALINE (NOREPINEPHRINE)**; increased risk of hypertension when volatile liquid general anaesthetics given with **METHYLPHENIDATE**
- ▶ **Theophylline**: increased risk of convulsions when ketamine given with **THEOPHYLLINE**
- ▶ **Vasodilator Antihypertensives**: enhanced hypotensive effect when general anaesthetics given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**

**Anaesthetics, General (intravenous)** see Anaesthetics, General  
**Anaesthetics, General (volatile liquids)** see Anaesthetics, General

**Anaesthetics, Local** see Bupivacaine, Chloroprocaine, Levobupivacaine, Lidocaine, Prilocaine, and Ropivacaine

**Anagrelide**

- **Cilostazol**: manufacturer of anagrelide advises avoid concomitant use with **CILOSTAZOL**
- **Phosphodiesterase Type-3 Inhibitors**: manufacturer of anagrelide advises avoid concomitant use with **ENOXIMONE** and **MILRINONE**

**Anakinra**

- **Cytotoxics**: avoid concomitant use of anakinra with **ADALIMUMAB**, **CERTOLIZUMAB PEGOL**, **GOLIMUMAB** or **INFLIXIMAB**
- **Etanercept**: avoid concomitant use of anakinra with **ETANERCEPT**
- **Vaccines**: risk of generalised infections when anakinra given with live **VACCINES**—avoid concomitant use

**Analgesics** see Aspirin, Nefopam, NSAIDs, Opioid Analgesics, and Paracetamol

**Angiotensin-II Receptor Antagonists**

- **ACE Inhibitors**: increased risk of hyperkalaemia, hypotension, and impaired renal function when angiotensin-II receptor antagonists given with **ACE INHIBITORS**—avoid concomitant use
- ▶ **Adrenergic Neurone Blockers**: enhanced hypotensive effect when angiotensin-II receptor antagonists given with **ADRENERGIC NEURONE BLOCKERS**
- ▶ **Alcohol**: enhanced hypotensive effect when angiotensin-II receptor antagonists given with **ALCOHOL**
- ▶ **Aldesleukin**: enhanced hypotensive effect when angiotensin-II receptor antagonists given with **ALDESLEUKIN**
- **Aliskiren**: increased risk of hyperkalaemia, hypotension, and impaired renal function when angiotensin-II receptor antagonists given with **ALISKIREN**—avoid concomitant use; irbesartan possibly reduces plasma concentration of **ALISKIREN**

**Angiotensin-II Receptor Antagonists** (continued)

- ▶ **Alpha-blockers**: enhanced hypotensive effect when angiotensin-II receptor antagonists given with **ALPHA-BLOCKERS**
- ▶ **Anaesthetics, General**: enhanced hypotensive effect when angiotensin-II receptor antagonists given with **GENERAL ANAESTHETICS**
- ▶ **Analgesics**: increased risk of renal impairment when angiotensin-II receptor antagonists given with **NSAIDs**, also hypotensive effect antagonised
- ▶ **Antibacterials**: plasma concentration of losartan and its active metabolite reduced by **RIFAMPICIN**; possible increased risk of hyperkalaemia when angiotensin-II receptor antagonists given with **TRIMETHOPRIM**
- ▶ **Anticoagulants**: increased risk of hyperkalaemia when angiotensin-II receptor antagonists given with **HEPARIN**
- ▶ **Antidepressants**: hypotensive effect of angiotensin-II receptor antagonists possibly enhanced by **MAOIs**
- ▶ **Antipsychotics**: enhanced hypotensive effect when angiotensin-II receptor antagonists given with **ANTIPSYCHOTICS**
- ▶ **Anxiolytics and Hypnotics**: enhanced hypotensive effect when angiotensin-II receptor antagonists given with **ANXIOLYTICS AND HYPNOTICS**
- ▶ **Beta-blockers**: enhanced hypotensive effect when angiotensin-II receptor antagonists given with **BETA-BLOCKERS**
- ▶ **Calcium-channel Blockers**: enhanced hypotensive effect when angiotensin-II receptor antagonists given with **CALCIUM-CHANNEL BLOCKERS**
- **Ciclosporin**: increased risk of hyperkalaemia when angiotensin-II receptor antagonists given with **CICLOSPORIN**
- ▶ **Clonidine**: enhanced hypotensive effect when angiotensin-II receptor antagonists given with **CLONIDINE**
- ▶ **Corticosteroids**: hypotensive effect of angiotensin-II receptor antagonists antagonised by **CORTICOSTEROIDS**
- ▶ **Diazoxide**: enhanced hypotensive effect when angiotensin-II receptor antagonists given with **DIAZOXIDE**
- **Diuretics**: enhanced hypotensive effect when angiotensin-II receptor antagonists given with **DIURETICS**; increased risk of hyperkalaemia when angiotensin-II receptor antagonists given with **POTASSIUM-SPARING DIURETICS** AND **ALDOSTERONE ANTAGONISTS**
- ▶ **Dopaminergics**: enhanced hypotensive effect when angiotensin-II receptor antagonists given with **CO-BENELDOPA**, **CO-CARELDOPA** or **LEVODOPA**
- **Lithium**: angiotensin-II receptor antagonists reduce excretion of **LITHIUM** (increased plasma concentration)
- ▶ **Methyldopa**: enhanced hypotensive effect when angiotensin-II receptor antagonists given with **METHYLDOPA**
- ▶ **Moxisylyte**: enhanced hypotensive effect when angiotensin-II receptor antagonists given with **MOXISYLYTE**
- ▶ **Moxonidine**: enhanced hypotensive effect when angiotensin-II receptor antagonists given with **MOXONIDINE**
- ▶ **Muscle Relaxants**: enhanced hypotensive effect when angiotensin-II receptor antagonists given with **BACLOFEN** or **TIZANIDINE**
- ▶ **Nitrates**: enhanced hypotensive effect when angiotensin-II receptor antagonists given with **NITRATES**
- ▶ **Oestrogens**: hypotensive effect of angiotensin-II receptor antagonists antagonised by **OESTROGENS**
- **Potassium Salts**: increased risk of hyperkalaemia when angiotensin-II receptor antagonists given with **POTASSIUM SALTS**
- ▶ **Prostaglandins**: enhanced hypotensive effect when angiotensin-II receptor antagonists given with **ALPROSTADIL**
- ▶ **Tacrolimus**: increased risk of hyperkalaemia when angiotensin-II receptor antagonists given with **TACROLIMUS**
- ▶ **Vasodilator Antihypertensives**: enhanced hypotensive effect when angiotensin-II receptor antagonists given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**

**Antacids**

- NOTE** Antacids should preferably not be taken at the same time as other drugs since they may impair absorption
- ▶ **ACE Inhibitors**: antacids possibly reduce absorption of **ACE INHIBITORS**; antacids reduce absorption of **CAPTAPRIL**, **ENALAPRIL** and **FOSINOPRIL**

**Antacids** (continued)

- ▶ Analgesics: antacids possibly reduce absorption of **ACETAMIN**; alkaline urine due to some antacids increases excretion of **ASPIRIN**
- ▶ Antihelmintics: sodium bicarbonate increases the excretion of **DIETHYLCARBAMAZINE**
- ▶ Antibacterials: antacids reduce absorption of **AZITHROMYCIN**, **CEFAZOLIN**, **CIPROFLOXACIN**, **ISONIAZID**, **LEVOFLOXACIN**, **MOXIFLOXACIN**, **NORFLOXACIN**, **OFLOXACIN**, **RIFAMPICIN** and **TETRACYCLINES**; avoid concomitant use of antacids with **METHENAMINE**; oral magnesium salts (as magnesium trisilicate) reduce absorption of **NITROFURANTOIN**
- ▶ Antiepileptics: antacids reduce absorption of **FOSPHENYTOIN**, **GABAPENTIN** and **PHENYTOIN**
- ▶ Antifungals: antacids reduce absorption of **ITRACONAZOLE** and **KETOCONAZOLE**
- ▶ Antihistamines: antacids reduce absorption of **FEXOFENADINE**
- ▶ Antimalarials: antacids reduce absorption of **CHLOROQUINE** and **HYDROXYCHLOROQUINE**; oral magnesium salts (as magnesium trisilicate) reduce absorption of **PROGUANIL**
- ▶ Antipsychotics: antacids reduce absorption of **PHENOTHIAZINES** and **SULPIRID**
- ▶ Antivirals: antacids reduce absorption of **ATAZANAVIR** (give at least 2 hours before or 1 hour after antacids); aluminium hydroxide reduces absorption of **DOLUTEGRAVIR**—manufacturer of dolutegravir advises give at least 2 hours before or 6 hours after aluminium hydroxide; oral magnesium salts reduce absorption of **DOLUTEGRAVIR**—manufacturer of dolutegravir advises give at least 2 hours before or 6 hours after oral magnesium salts; aluminium hydroxide reduces absorption of **ELVITEGRAVIR** (give at least 4 hours apart); oral magnesium salts reduce absorption of **ELVITEGRAVIR** (give at least 4 hours apart); aluminium hydroxide reduces plasma concentration of **RALTEGRAVIR**—manufacturer of raltegravir advises avoid concomitant use; oral magnesium salts reduce plasma concentration of **RALTEGRAVIR**—manufacturer of raltegravir advises avoid concomitant use; manufacturer of rilpivirine advises give antacids 2 hours before or 4 hours after **RILPIVIRINE**; antacids reduce absorption of **TIPRANAVIR** (give at least 2 hours apart)
- ▶ Bile Acids: antacids possibly reduce absorption of **BILE ACIDS**
- ▶ Bisphosphonates: antacids reduce absorption of **BISPHOSPHONATES**
- ▶ Cardiac Glycosides: antacids possibly reduce absorption of **DIGOXIN**
- ▶ Corticosteroids: antacids reduce absorption of **DEFLAZACORT**
- Cytotoxics: aluminium hydroxide and oral magnesium salts possibly reduce absorption of **ESTRAMUSTINE**—manufacturer of estramustine advises avoid concomitant administration; separating administration with antacids by about 12 hours advised by manufacturer of **BOSUTINIB**; antacids possibly reduce plasma concentration of ● **ERLOTINIB**—give antacids at least 4 hours before or 2 hours after erlotinib
- ▶ Deferasirox: antacids containing aluminium possibly reduce absorption of **DEFERASIROX** (manufacturer of deferasirox advises avoid concomitant use)
- ▶ Deferiprone: antacids containing aluminium possibly reduce absorption of **DEFERIPRONE** (manufacturer of deferiprone advises avoid concomitant use)
- ▶ Dipyrindamole: antacids possibly reduce absorption of **DIPYRIDAMOLE**
- ▶ Eltrombopag: antacids reduce absorption of **ELTROMBOPAG** (give at least 4 hours apart)
- ▶ Folate: antacids possibly reduce absorption of **FOLIC ACID** (manufacturer of folic acid advises give at least 2 hours apart)
- ▶ Iron Salts: oral magnesium salts (as magnesium trisilicate) reduce absorption of oral **IRON SALTS**
- ▶ Lipid-regulating Drugs: antacids reduce absorption of **ROSUVASTATIN**
- ▶ Lithium: sodium bicarbonate increases excretion of **LITHIUM** (reduced plasma concentration)
- ▶ Mycophenolate: antacids reduce absorption of **MYCOPHENOLATE**
- ▶ Penicillamine: antacids reduce absorption of **PENICILLAMINE**
- ▶ Polystyrene Sulfonate Resins: risk of intestinal obstruction when aluminium hydroxide given with **POLYSTYRENE**

**Antacids****Polystyrene Sulfonate Resins** (continued)

- SULFONATE RESINS**; risk of metabolic alkalosis when oral magnesium salts given with **POLYSTYRENE SULFONATE RESINS**
- ▶ Riociguat: antacids reduce absorption of **RIOCIQUAT** (give at least 2 hours before or 1 hour after riociguat)
- ▶ Sympathomimetics: aluminium hydroxide possibly increases absorption of **PSEUDOEPHEDRINE**
- ▶ Thyroid Hormones: antacids possibly reduce absorption of **LEVOTHYROXINE**
- ▶ Ulcer-healing Drugs: antacids possibly reduce absorption of **LANSOPRAZOLE**

**Antazoline** see Antihistamines**Antihelmintics** see individual drugs**Anthrax Vaccine** see Vaccines**Anti-D Immunoglobulins** see Immunoglobulins**Anti-arrhythmics** see Adenosine, Amiodarone, Disopyramide, Dronedarone, Flecainide, Lidocaine, and Propafenone**Antibacterials** see individual drugs**Antibiotics (cytotoxic)** see Bleomycin, Doxorubicin, Epirubicin, Idarubicin, Mitomycin, Mitoxantrone, and Pixacone**Anticoagulants** see Apixaban, Argatroban, Bivalirudin, Coumarins, Dabigatran, Danaparoid, Fondaparinux, Heparins, Phenindione, and Rivaroxaban**Antidepressants** see Agomelatine; Antidepressants, SSRI; Antidepressants, Tricyclic; Antidepressants, Tricyclic (related); MAOIs; Mirtazapine; Moclobemide; Reboxetine; St John's Wort; Venlafaxine**Antidepressants, Noradrenaline Re-uptake Inhibitors** see Reboxetine**Antidepressants, SSRI****NOTE** see also Dapoxetine

- ▶ Alcohol: sedative effects possibly increased when SSRIs given with **ALCOHOL**
- Aminophylline: fluvoxamine increases plasma concentration of ● **AMINOPHYLLINE** (concomitant use should usually be avoided, but where not possible halve aminophylline dose and monitor plasma-aminophylline concentration)
- ▶ Anaesthetics, Local: fluvoxamine inhibits metabolism of **ROPIVACAINE**—avoid prolonged administration of ropivacaine
- Analgesics: increased risk of bleeding when SSRIs given with ● **NSAIDS** or ● **ASPIRIN**; possible increased serotonergic effects when SSRIs given with **FENTANYL**; fluoxetine, fluvoxamine, paroxetine and sertraline possibly increase plasma concentration of **METHADONE**; increased risk of CNS toxicity when SSRIs given with ● **TRAMADOL**
- Anti-arrhythmics: manufacturer of citalopram and escitalopram advises avoid concomitant use with ● **AMIODARONE** (risk of ventricular arrhythmias); manufacturer of citalopram and escitalopram advises avoid concomitant use with ● **DISOPYRAMIDE** (risk of ventricular arrhythmias); manufacturer of citalopram and escitalopram advises avoid concomitant use with ● **DRONEDARONE** (risk of ventricular arrhythmias); fluoxetine increases plasma concentration of **FLECAINIDE**; fluoxetine and paroxetine possibly inhibit metabolism of **PROPAFENONE**
- Antibacterials: manufacturer of citalopram and escitalopram advises avoid concomitant use with *intravenous* ● **ERYTHROMYCIN** (risk of ventricular arrhythmias); manufacturer of citalopram and escitalopram advises avoid concomitant use with ● **MOXIFLOXACIN** (risk of ventricular arrhythmias); possible increased risk of ventricular arrhythmias when citalopram given with ● **TELITHROMYCIN**
- Anticoagulants: SSRIs possibly enhance anticoagulant effect of ● **COUMARINS**; possible increased risk of bleeding when SSRIs given with ● **DABIGATRAN**
- Antidepressants: avoidance of fluvoxamine advised by manufacturer of ● **REBOXETINE**; possible increased serotonergic effects when SSRIs given with **DULOXETINE**; fluvoxamine inhibits metabolism of ● **DULOXETINE**—avoid concomitant use; citalopram, escitalopram, fluvoxamine, paroxetine or sertraline should not be started until 2 weeks after stopping ● **MAOIS**, also MAOIs should not be started until at least 1 week after stopping citalopram, escitalopram, fluvoxamine, paroxetine or sertraline; fluoxetine should not

**Antidepressants, SSRI**

- **Antidepressants (continued)**
  - be started until 2 weeks after stopping • **MAOIs**, also MAOIs should not be started until at least 5 weeks after stopping fluoxetine; CNS effects of SSRIs increased by • **MAOIs** (risk of serious toxicity); increased risk of CNS toxicity when escitalopram given with • **MOCLOBEMIDE**, preferably avoid concomitant use; after stopping citalopram, fluvoxamine, paroxetine or sertraline do not start • **MOCLOBEMIDE** for at least 1 week; after stopping fluoxetine do not start • **MOCLOBEMIDE** for 5 weeks; increased serotonergic effects when SSRIs given with • **ST JOHN'S WORT**—avoid concomitant use; fluvoxamine inhibits metabolism of • **AGOMELATINE** (increased plasma concentration); possible increased serotonergic effects when fluoxetine or fluvoxamine given with • **MIRTAZAPINE**; SSRIs increase plasma concentration of some • **TRICYCLICS**; manufacturer of citalopram and escitalopram advises avoid concomitant use with • **TRICYCLICS** (risk of ventricular arrhythmias)
- **Antiepileptics**: SSRIs antagonise anticonvulsant effect of • **ANTIEPILEPTICS** (convulsive threshold lowered); fluoxetine and fluvoxamine increase plasma concentration of • **CARBAMAZEPINE**; fluoxetine and fluvoxamine increase plasma concentration of • **FOSPHENYTOIN**; plasma concentration of sertraline possibly reduced by • **FOSPHENYTOIN** and • **PHENYTOIN**, also plasma concentration of fosphenytoin and phenytoin possibly increased; plasma concentration of paroxetine reduced by • **FOSPHENYTOIN**, • **PHENOBARBITAL**, • **PHENYTOIN** and • **PRIMIDONE**; fluoxetine and fluvoxamine increase plasma concentration of • **PHENYTOIN**
- **Antifungals**: plasma concentration of paroxetine possibly increased by • **TERBINAFIN**
- **Antihistamines**: manufacturer of citalopram and escitalopram advises avoid concomitant use with • **MIZOLASTINE** (risk of ventricular arrhythmias); antidepressant effect of SSRIs possibly antagonised by • **CYPROHEPTADINE**
- **Antimalarials**: avoidance of antidepressants advised by manufacturer of • **ARTEMETHER WITH LUMEFANTRINE** and • **ARTENIMOL WITH PIPERAQUINE**; possible increased risk of ventricular arrhythmias when citalopram or escitalopram given with • **ARTEMETHER WITH LUMEFANTRINE**—avoid concomitant use; possible increased risk of ventricular arrhythmias when citalopram or escitalopram given with • **ARTENIMOL WITH PIPERAQUINE**—avoid concomitant use; possible increased risk of ventricular arrhythmias when citalopram and escitalopram given with • **CHLOROQUINE**; possible increased risk of ventricular arrhythmias when citalopram or escitalopram given with • **QUININE**—avoid concomitant use
- **Antimuscarinics**: paroxetine increases plasma concentration of • **DARIFENACIN** and • **PROCYCLIDINE**
- **Antipsychotics**: avoidance of fluoxetine, fluvoxamine and sertraline advised by manufacturer of • **DROPERIDOL** (risk of ventricular arrhythmias); manufacturer of citalopram and escitalopram advises avoid concomitant use with • **HALOPERIDOL** (risk of ventricular arrhythmias); fluoxetine increases plasma concentration of • **CLOZAPINE**, • **HALOPERIDOL** and • **RISPERIDONE**; fluvoxamine possibly increases plasma concentration of • **ASENAPINE** and • **HALOPERIDOL**; paroxetine inhibits metabolism of • **PERPHENAZINE** (reduce dose of perphenazine); fluoxetine and paroxetine possibly increase plasma concentration of • **ARIPRAZOLE** (reduce dose of aripiprazole—consult aripiprazole product literature); plasma concentration of paroxetine possibly increased by • **ASENAPINE**; fluvoxamine, paroxetine and sertraline increase plasma concentration of • **CLOZAPINE**; citalopram possibly increases plasma concentration of • **CLOZAPINE** (increased risk of toxicity); fluvoxamine increases plasma concentration of • **OLANZAPINE**; manufacturer of citalopram and escitalopram advises avoid concomitant use with • **PHENOTHIAZINES** (risk of ventricular arrhythmias); manufacturer of citalopram and escitalopram advises avoid concomitant use with • **PIMOZIDE** (risk of ventricular arrhythmias); SSRIs possibly increase plasma concentration of • **PIMOZIDE** (increased risk of ventricular

**Antidepressants, SSRI**

- **Antipsychotics (continued)**
  - arrhythmias—avoid concomitant use); paroxetine possibly increases plasma concentration of • **RISPERIDONE** (increased risk of toxicity)
- **Antivirals**: plasma concentration of paroxetine and sertraline possibly reduced by • **DARUNAVIR**; plasma concentration of SSRIs possibly increased by • **RITONAVIR**; plasma concentration of paroxetine possibly reduced by • **RITONAVIR**
- **Anxiolytics and Hypnotics**: fluoxetine increases plasma concentration of • **ALPRAZOLAM**; fluvoxamine increases plasma concentration of some • **BENZODIAZEPINES**; fluvoxamine increases plasma concentration of • **MELATONIN**—avoid concomitant use; sedative effects possibly increased when sertraline given with • **ZOLPIDEM**
- **Atomoxetine**: possible increased risk of convulsions when antidepressants given with • **ATOMOXETINE**; fluoxetine and paroxetine possibly inhibit metabolism of • **ATOMOXETINE**
- **Beta-blockers**: citalopram and escitalopram increase plasma concentration of • **METOPROLOL**; paroxetine possibly increases the plasma concentration of • **METOPROLOL**—increased risk of AV block (manufacturer of paroxetine advises avoid concomitant use in cardiac insufficiency); fluvoxamine increases plasma concentration of • **PROPRANOLOL**; increased risk of ventricular arrhythmias when citalopram given with • **SOTALOL**—avoid concomitant use; manufacturer of escitalopram advises avoid concomitant use with • **SOTALOL** (risk of ventricular arrhythmias)
- **Bupropion**: plasma concentration of citalopram possibly increased by • **BUPROPION**
- **Calcium-channel Blockers**: fluoxetine possibly inhibits metabolism of • **NIFEDIPINE** (increased plasma concentration)
- **Clopidogrel**: fluoxetine and fluvoxamine possibly reduce antiplatelet effect of • **CLOPIDOGREL**
- **Dapoxetine**: possible increased risk of serotonergic effects when SSRIs given with • **DAPOXETINE** (manufacturer of dapoxetine advises SSRIs should not be started until 1 week after stopping dapoxetine, avoid dapoxetine for 2 weeks after stopping SSRIs)
- **Dopaminergics**: increased risk of CNS toxicity when SSRIs given with • **RASAGILINE**; fluvoxamine should not be started until 2 weeks after stopping • **RASAGILINE**; fluoxetine should not be started until 2 weeks after stopping • **RASAGILINE**, also rasagiline should not be started until at least 5 weeks after stopping fluoxetine; avoidance of citalopram and escitalopram advised by manufacturer of • **SELEGILINE**; increased risk of hypertension and CNS excitation when fluvoxamine or sertraline given with • **SELEGILINE** (selegiline should not be started until 1 week after stopping fluvoxamine or sertraline, avoid fluvoxamine or sertraline for 2 weeks after stopping selegiline); increased risk of hypertension and CNS excitation when paroxetine given with • **SELEGILINE** (selegiline should not be started until 2 weeks after stopping paroxetine, avoid paroxetine for 2 weeks after stopping selegiline); increased risk of hypertension and CNS excitation when fluoxetine given with • **SELEGILINE** (selegiline should not be started until 5 weeks after stopping fluoxetine, avoid fluoxetine for 2 weeks after stopping selegiline)
- **Grapefruit Juice**: plasma concentration of sertraline possibly increased by • **GRAPEFRUIT JUICE**
- **Hormone Antagonists**: fluoxetine and paroxetine possibly inhibit metabolism of • **TAMOXIFEN** to active metabolite (avoid concomitant use)
- **5HT<sub>2</sub>-receptor Agonists**: increased risk of CNS toxicity when citalopram given with • **5HT<sub>2</sub> AGONISTS** (manufacturer of citalopram advises avoid concomitant use); fluvoxamine inhibits the metabolism of • **FROVATRIPATAN**; possible increased serotonergic effects when SSRIs given with • **NARATRIPTAN**; CNS toxicity reported when sertraline given with • **SUMATRIPTAN**; increased risk of CNS toxicity when citalopram, escitalopram, fluoxetine, fluvoxamine or paroxetine given with • **SUMATRIPTAN**; fluvoxamine possibly inhibits metabolism of • **ZOLMITRIPTAN** (reduce dose of zolmitriptan)
- **5HT<sub>2</sub>-receptor Antagonists**: possible increased serotonergic effects when SSRIs given with • **5HT<sub>2</sub> ANTAGONISTS**

**Antidepressants, SSRI (continued)**

- ▶ Lipid-regulating Drugs: separating administration from fluoxetine and fluvoxamine by 12 hours advised by manufacturer of **LOMITAPIDE**
- Lithium: Increased risk of CNS effects when SSRIs given with
  - **LITHIUM** (lithium toxicity reported)
- Methylthioninium: risk of CNS toxicity when SSRIs given with
  - **METHYLTHIONINIUM**—avoid concomitant use (if avoidance not possible, use lowest possible dose of methylthioninium and observe patient for up to 4 hours after administration)
- ▶ Metoclopramide: CNS toxicity reported when SSRIs given with **METOCLOPRAMIDE**
- Muscle Relaxants: fluvoxamine increases plasma concentration of
  - **TIZANIDINE** (increased risk of toxicity)—avoid concomitant use
- ▶ Parasympathomimetics: paroxetine increases plasma concentration of **GALANTAMINE**
- Pentamidine Isetionate: manufacturer of citalopram and escitalopram advises avoid concomitant use with
  - **PENTAMIDINE ISETIONATE** (risk of ventricular arrhythmias)
- Pifenidone: fluvoxamine increases plasma concentration of
  - **PIRFENIDONE**—manufacturer of pifenidone advises avoid concomitant use
- Pomalidomide: fluvoxamine increases plasma concentration of
  - **POMALIDOMIDE**
- ▶ Ranolazine: paroxetine increases plasma concentration of **RANOLAZINE**
- ▶ Roflumilast: fluvoxamine inhibits the metabolism of **ROFLUMILAST**
- ▶ Sympathomimetics: metabolism of SSRIs possibly inhibited by **METHYLPHENIDATE**
- Theophylline: fluvoxamine increases plasma concentration of
  - **THEOPHYLLINE** (concomitant use should usually be avoided, but where not possible halve theophylline dose and monitor plasma-theophylline concentration)
- ▶ Ticagrelor: possible increased risk of bleeding when citalopram, paroxetine or sertraline given with **TICAGRELOR**
- ▶ Ulcer-healing Drugs: plasma concentration of citalopram, escitalopram and sertraline increased by **CIMETIDINE**; fluvoxamine possibly increases plasma concentration of **LANSOPRAZOLE**; plasma concentration of escitalopram increased by **OMEPRAZOLE**

**Antidepressants, SSRI (related)** see Duloxetine and Venlafaxine

**Antidepressants, Tricyclic**

- ▶ Adrenergic Neurons Blockers: tricyclics antagonise hypotensive effect of **ADRENERGIC NEURONE BLOCKERS**
- Alcohol: increased sedative effect when tricyclics given with
  - **ALCOHOL**
- ▶ Alpha<sub>2</sub>-adrenoceptor Stimulants: avoidance of tricyclics advised by manufacturer of **APRACLOINIDINE** and **BRIMONIDINE**
- ▶ Anaesthetics, General: increased risk of arrhythmias and hypotension when tricyclics given with **GENERAL ANAESTHETICS**
- Analgesics: increased risk of CNS toxicity when tricyclics given with
  - **TRAMADOL**; side-effects possibly increased when tricyclics given with **NEFOPAM**; sedative effects possibly increased when tricyclics given with **OPIOID ANALGESICS**
- Anti-arrhythmics: increased risk of ventricular arrhythmias when tricyclics given with
  - **AMIODARONE**—avoid concomitant use; increased risk of ventricular arrhythmias when tricyclics given with
    - **DISOPYRAMIDE** or ● **FLECAINIDE**; avoidance of tricyclics advised by manufacturer of ● **DRONEDARONE** (risk of ventricular arrhythmias); increased risk of arrhythmias when tricyclics given with ● **PROPAFENONE**
- Antibacterials: increased risk of ventricular arrhythmias when tricyclics given with
  - **MOXIFLOXACIN**—avoid concomitant use; possible increased risk of ventricular arrhythmias when tricyclics that prolong the QT interval given with
    - **DELAMANID**; possible increased risk of ventricular arrhythmias when tricyclics given with ● **TELITROMYCIN**
- Anticoagulants: tricyclics may enhance or reduce anticoagulant effect of
  - **COUMARINS**
- Antidepressants: avoidance of tricyclics advised by manufacturer of
  - **CITALOPRAM** and ● **ESCITALOPRAM** (risk of ventricular arrhythmias); possible increased serotonergic effects when amitriptyline or clomipramine given with **DULOXETINE**; increased risk of hypertension and CNS excitation when tricyclics given with ● **MAOIS**, tricyclics should not be started until 2 weeks after stopping MAOIs (3 weeks if starting clomipramine or imipramine), also MAOIs should not be started for at least 1–2 weeks after stopping tricyclics (3 weeks in the case of clomipramine or imipramine); after stopping tricyclics do not start
    - **MOCLOBEMIDE** for at least 1 week; plasma concentration of some tricyclics increased by ● **SSRIS**; plasma concentration of amitriptyline reduced by **ST JOHN'S WORT**
- Antiepileptics: tricyclics antagonise anticonvulsant effect of
  - **ANTI-EPILEPTICS** (convulsive threshold lowered); metabolism of tricyclics accelerated by ● **CARBAMAZEPINE** (reduced plasma concentration and reduced effect); plasma concentration of tricyclics possibly reduced by ● **FOSPHENYTOIN** and ● **PHENYTOIN**; metabolism of tricyclics possibly accelerated by ● **PHENOBARBITAL** and ● **PRIMIDONE** (reduced plasma concentration)
- ▶ Antifungals: plasma concentration of amitriptyline and nortriptyline possibly increased by **FLUCONAZOLE**; plasma concentration of tricyclics possibly increased by **TERBINAFINE**
- ▶ Antihistamines: increased antimuscarinic and sedative effects when tricyclics given with **ANTIHISTAMINES**
- Antimalarials: avoidance of antidepressants advised by manufacturer of
  - **ARTEMETHER WITH LUMEFANTRINE** and ● **ARTENIMOL WITH PIPERAQUINE**
- ▶ Antimuscarinics: increased risk of antimuscarinic side-effects when tricyclics given with **ANTIMUSCARINICS**
- Antipsychotics: avoidance of tricyclics advised by manufacturer of
  - **DROPERIDOL**, ● **FLUPHENAZINE**, ● **HALOPERIDOL**, ● **SULPIDIDE** and ● **ZUCLOPENTHIXOL** (risk of ventricular arrhythmias); possible increased antimuscarinic side-effects when tricyclics given with **CLOZAPINE**; increased risk of antimuscarinic side-effects when tricyclics given with **PHENOTHIAZINES**; possible increased risk of ventricular arrhythmias when tricyclics given with ● **RISPERIDONE**
- Antivirals: plasma concentration of tricyclics possibly increased by
  - **RITONAVIR**; increased risk of ventricular arrhythmias when tricyclics given with ● **SAQUINAVIR**—avoid concomitant use
- ▶ Anxiolytics and Hypnotics: increased sedative effect when tricyclics given with **ANXIOLYTICS AND HYPNOTICS**
- Atomoxetine: increased risk of ventricular arrhythmias when tricyclics given with
  - **ATOMOXETINE**; possible increased risk of convulsions when antidepressants given with **ATOMOXETINE**
- Beta-blockers: plasma concentration of imipramine increased by **LABETALOL** and **PROPRANOLOL**; increased risk of ventricular arrhythmias when tricyclics given with ● **SOTALOL**
- ▶ Bupropion: plasma concentration of tricyclics possibly increased by **BUPROPION** (possible increased risk of convulsions)
- ▶ Calcium-channel Blockers: plasma concentration of imipramine increased by **DILTIAZEM** and **VERAPAMIL**; plasma concentration of tricyclics possibly increased by **DILTIAZEM** and **VERAPAMIL**
- ▶ Cannabis Extract: possible increased risk of hypertension and tachycardia when tricyclics given with **CANNABIS EXTRACT**
- Clonidine: tricyclics antagonise hypotensive effect of
  - **CLONIDINE**, also increased risk of hypertension on clonidine withdrawal
- Cytotoxics: increased risk of ventricular arrhythmias when amitriptyline or clomipramine given with ● **ARSENIC TRIOXIDE**
- Dapoxetine: possible increased risk of serotonergic effects when tricyclics given with ● **DAPOXETINE** (manufacturer of dapoxetine advises tricyclics should not be started until 1 week after stopping dapoxetine, avoid dapoxetine for 2 weeks after stopping tricyclics)
- ▶ Disulfiram: metabolism of tricyclics inhibited by **DISULFIRAM** (increased plasma concentration); concomitant amitriptyline reported to increase **DISULFIRAM** reaction with alcohol
- ▶ Diuretics: increased risk of postural hypotension when tricyclics given with **DIURETICS**
- Dopaminergics: caution with tricyclics advised by manufacturer of **ENTACAPONE**; increased risk of CNS toxicity



**Antidepressants, Tricyclic**

- Dopaminergics (continued)
  - when tricyclics given with • **RASAGILINE**; CNS toxicity reported when tricyclics given with • **SELEGILINE**
- ▶ Histamine: tricyclics theoretically antagonise effects of **HISTAMINE**—manufacturer of histamine advises avoid concomitant use
- ▶ Lithium: risk of toxicity when tricyclics given with **LITHIUM**
- Methylthioninium: risk of CNS toxicity when clomipramine given with • **METHYLTHIONINIUM**—avoid concomitant use (if avoidance not possible, use lowest possible dose of methylthioninium and observe patient for up to 4 hours after administration)
- ▶ Moxonidine: tricyclics possibly antagonise hypotensive effect of **MOXONIDINE** (manufacturer of moxonidine advises avoid concomitant use)
- ▶ Muscle Relaxants: tricyclics enhance muscle relaxant effect of **BACLOFEN**
- ▶ Nicorandil: tricyclics possibly enhance hypotensive effect of **NICORANDIL**
- ▶ Nitrates: tricyclics reduce effects of sublingual tablets of **NITRATES** (failure to dissolve under tongue owing to dry mouth)
- ▶ Oestrogens: antidepressant effect of tricyclics antagonised by **OESTROGENS** (but side-effects of tricyclics possibly increased due to increased plasma concentration)
- Pentamidine Isetionate: increased risk of ventricular arrhythmias when tricyclics given with • **PENTAMIDINE ISETIONATE**
- ▶ Sodium Oxybate: increased risk of side-effects when tricyclics given with **SODIUM OXYBATE**
- Sympathomimetics: increased risk of hypertension and arrhythmias when tricyclics given with • **ADRENALINE (EPINEPHRINE)** (but local anaesthetics with adrenaline appear to be safe); metabolism of tricyclics possibly inhibited by **METHYLPHENIDATE**; increased risk of hypertension and arrhythmias when tricyclics given with • **NORADRENALINE (NOREPINEPHRINE)** or **PHENYLEPHRINE**
- ▶ Thyroid Hormones: effects of tricyclics possibly enhanced by **THYROID HORMONES**; effects of amitriptyline and imipramine enhanced by **THYROID HORMONES**
- ▶ Ulcer-healing Drugs: plasma concentration of tricyclics possibly increased by **CIMETIDINE**; metabolism of amitriptyline, doxepin, imipramine and nortriptyline inhibited by **CIMETIDINE** (increased plasma concentration)

**Antidepressants, Tricyclic (related)**

- Alcohol: increased sedative effect when tricyclic-related antidepressants given with • **ALCOHOL**
- ▶ Alpha<sub>2</sub>-adrenoceptor Stimulants: avoidance of tricyclic-related antidepressants advised by manufacturer of **APRACLOINIDINE** and **BRIMONIDINE**
- ▶ Antibacterials: plasma concentration of trazodone possibly increased by **CLARITHROMYCIN**
- ▶ Anticoagulants: trazodone may enhance or reduce anticoagulant effect of **WARFARIN**
- Antidepressants: tricyclic-related antidepressants should not be started until 2 weeks after stopping • **MAOIs**, also MAOIs should not be started until at least 1–2 weeks after stopping tricyclic-related antidepressants; after stopping tricyclic-related antidepressants do not start • **MOCLOBEMIDE** for at least 1 week
- Antiepileptics: tricyclic-related antidepressants possibly antagonise anticonvulsant effect of • **ANTIEPILEPTICS** (convulsive threshold lowered); plasma concentration of mianserin and trazodone reduced by • **CARBAMAZEPINE**; plasma concentration of mianserin reduced by • **FOSPHENYTOIN** and • **PHENYTOIN**; metabolism of mianserin accelerated by • **PHENOBARBITAL** and • **PRIMIDONE** (reduced plasma concentration)
- ▶ Antihistamines: possible increased antimuscarinic and sedative effects when tricyclic-related antidepressants given with **ANTIHISTAMINES**
- Antimalarials: avoidance of antidepressants advised by manufacturer of • **ARTEMETHER WITH LUMEFANTRINE** and • **ARTENIMOL WITH PIPERAQUINE**

**Antidepressants, Tricyclic (related) (continued)**

- ▶ Antimuscarinics: possible increased antimuscarinic side-effects when tricyclic-related antidepressants given with **ANTIMUSCARINICS**
- Antivirals: plasma concentration of trazodone increased by • **RITONAVIR** (increased risk of toxicity); increased risk of ventricular arrhythmias when trazodone given with • **SAQUINAVIR**—avoid concomitant use; plasma concentration of trazodone possibly increased by **TELAPREVIR**
- ▶ Anxiolytics and Hypnotics: increased sedative effect when tricyclic-related antidepressants given with **ANXIOLYTICS AND HYPNOTICS**
- ▶ Atomoxetine: possible increased risk of convulsions when antidepressants given with **ATOMOXETINE**
- ▶ Diazoxide: enhanced hypotensive effect when tricyclic-related antidepressants given with **DIAZOXIDE**
- ▶ Nitrates: tricyclic-related antidepressants possibly reduce effects of sublingual tablets of **NITRATES** (failure to dissolve under tongue owing to dry mouth)
- ▶ Vasodilator Antihypertensives: enhanced hypotensive effect when tricyclic-related antidepressants given with **HYDRALAZINE** or **SODIUM NITROPRUSSIDE**

**Antidiabetics**

- NOTE** Other drugs administered orally may need to be taken at least 1 hour before or 4 hours after lixisenatide injection, or taken with a meal when lixisenatide is not administered, to minimise possible interference with absorption
- NOTE** Other drugs administered orally may need to be taken at least 1 hour before or 4 hours after exenatide injection, or taken with a meal when exenatide is not administered, to minimise possible interference with absorption
- ▶ ACE Inhibitors: hypoglycaemic effect of insulin, metformin and sulfonylureas possibly enhanced by **ACE INHIBITORS**
  - ▶ Alcohol: hypoglycaemic effect of antidiabetics enhanced by **ALCOHOL**; increased risk of lactic acidosis when metformin given with **ALCOHOL**
  - ▶ Anabolic Steroids: hypoglycaemic effect of antidiabetics possibly enhanced by **ANABOLIC STEROIDS**
  - Analgesics: effects of sulfonylureas possibly enhanced by • **NSAIDS**; lixisenatide possibly reduces the absorption of **PARACETAMOL** when given 1 to 4 hours before paracetamol
  - ▶ Anti-arrhythmics: hypoglycaemic effect of gliclazide, insulin and metformin possibly enhanced by **DISOPYRAMIDE**
  - Antibacterials: hypoglycaemic effect of acarbose possibly enhanced by **NEOMYCIN**, also severity of gastro-intestinal effects increased; effects of repaglinide enhanced by **CLARITHROMYCIN**; effects of glibenclamide possibly enhanced by **NORFLOXACIN**; plasma concentration of canagliflozin and nateglinide reduced by • **RIFAMPICIN**; effects of linagliptin possibly reduced by **RIFAMPICIN**; hypoglycaemic effect of repaglinide possibly antagonised by **RIFAMPICIN**; effects of sulfonylureas enhanced by • **CHLORAMPHENICOL**; metabolism of tolbutamide accelerated by • **RIFAMYCINS** (reduced effect); metabolism of sulfonylureas possibly accelerated by • **RIFAMYCINS** (reduced effect); effects of sulfonylureas rarely enhanced by **SULFONAMIDES** and **TRIMETHOPRIM**; hypoglycaemic effect of sulfonylureas possibly enhanced by **TETRACYCLINES**; hypoglycaemic effect of repaglinide possibly enhanced by **TRIMETHOPRIM**—manufacturer advises avoid concomitant use
  - Anticoagulants: exenatide possibly enhances anticoagulant effect of **WARFARIN**; hypoglycaemic effect of sulfonylureas possibly enhanced by • **COUMARINS**, also possible changes to anticoagulant effect
  - ▶ Antidepressants: hypoglycaemic effect of antidiabetics possibly enhanced by **MAOIs**; hypoglycaemic effect of insulin, metformin and sulfonylureas enhanced by **MAOIs**
  - ▶ Antidiabetics: manufacturer of dapagliflozin advises avoid concomitant use with **PIOGLITAZONE**
  - ▶ Antiepileptics: tolbutamide transiently increases plasma concentration of **FOSPHENYTOIN** and **PHENYTOIN** (possibility of toxicity); plasma concentration of glibenclamide possibly reduced by **TOPIRAMATE**; plasma concentration of metformin possibly increased by **TOPIRAMATE**
  - Antifungals: plasma concentration of pioglitazone, saxagliptin and tolbutamide increased by **KETOCONAZOLE**; plasma

**Antidiabetics**

- Antifungals (continued)
  - concentration of sulfonyleureas increased by ● **FLUCONAZOLE** and ● **MICONAZOLE**; hypoglycaemic effect of gliclazide and glipizide enhanced by ● **MICONAZOLE**—avoid concomitant use; hypoglycaemic effect of nateglinide possibly enhanced by **FLUCONAZOLE**; hypoglycaemic effect of repaglinide possibly enhanced by **ITRACONAZOLE**; hypoglycaemic effect of glipizide possibly enhanced by **POSACONAZOLE**; plasma concentration of sulfonyleureas possibly increased by **VORICONAZOLE**
- ▶ Antihistamines: thrombocyte count depressed when metformin given with **KETOTIFEN** (manufacturer of ketotifen advises avoid concomitant use)
- ▶ Antipsychotics: hypoglycaemic effect of sulfonyleureas possibly antagonised by **PHENOTHIAZINES**
- ▶ Antivirals: plasma concentration of tolbutamide possibly increased by **RITONAVIR**; plasma concentration of metformin increased by **TELAPREVIR** (consider reducing dose of metformin)
- ▶ Aprepitant: plasma concentration of tolbutamide reduced by **APREPITANT**
- ▶ Beta-blockers: warning signs of hypoglycaemia (such as tremor) with antidiabetics may be masked when given with **BETA-BLOCKERS**; hypoglycaemic effect of insulin enhanced by **BETA-BLOCKERS**
- Bosentan: increased risk of hepatotoxicity when glibenclamide given with ● **BOSENTAN**—avoid concomitant use
- ▶ Calcium-channel Blockers: glucose tolerance occasionally impaired when insulin given with **NIFEDIPINE**
- ▶ Cardiac Glycosides: canagliflozin and sitagliptin increase plasma concentration of **DIGOXIN**; acarbose possibly reduces plasma concentration of **DIGOXIN**
- ▶ Cidofovir: hypoglycaemic effect of repaglinide possibly enhanced by **CICLOSPORIN**
- ▶ Corticosteroids: hypoglycaemic effect of antidiabetics antagonised by **CORTICOSTEROIDS**
- Cytotoxics: avoidance of repaglinide advised by manufacturer of ● **LAPATINIB**; plasma concentration of metformin possibly increased by **VANDETANIB** (consider reducing dose of metformin)
- ▶ Deferasirox: plasma concentration of repaglinide increased by **DEFERASIROX**
- ▶ Diazoxide: hypoglycaemic effect of antidiabetics antagonised by **DIAZOXIDE**
- ▶ Diuretics: canagliflozin possibly enhances diuretic effect of **DIURETICS**; manufacturer of canagliflozin advises avoid concomitant use with **LOOP DIURETICS**; hypoglycaemic effect of antidiabetics antagonised by **LOOP DIURETICS** and **THIAZIDES AND RELATED DIURETICS**; dapagliflozin possibly enhances diuretic effect of **LOOP DIURETICS** and **THIAZIDES AND RELATED DIURETICS**
- ▶ Fosaprepitant: plasma concentration of tolbutamide reduced by **FOSAPREPITANT**
- ▶ Hormone Antagonists: requirements for antidiabetics possibly reduced by **LANREOTIDE**, **OCTREOTIDE** and **PASIREOTIDE**
- ▶ Leflunomide: hypoglycaemic effect of tolbutamide possibly enhanced by **LEFLUNOMIDE**
- Lipid-regulating Drugs: absorption of glibenclamide and glipizide reduced by **COLESEVELAM**; absorption of glimepiride reduced by **COLESEVELAM**—manufacturer of glimepiride advises give at least 4 hours before colessevelam; hypoglycaemic effect of acarbose possibly enhanced by **COLESTYRAMINE**; hypoglycaemic effect of nateglinide possibly enhanced by **GEMFIBROZIL**; increased risk of severe hypoglycaemia when repaglinide given with ● **GEMFIBROZIL**—avoid concomitant use; plasma concentration of glibenclamide possibly increased by **FLUVESTATIN**; manufacturer of canagliflozin advises give at least 1 hour before or 4–6 hours after **BILE ACID SEQUESTRANTS**; may be improved glucose tolerance and an additive effect when insulin or sulfonyleureas given with **FIBRATES**; separating administration from linagliptin by 12 hours advised by manufacturer of **LOMITAPIDE**
- ▶ Oestrogens: hypoglycaemic effect of antidiabetics antagonised by **OESTROGENS**

**Antidiabetics (continued)**

- ▶ Orlistat: avoidance of acarbose advised by manufacturer of **ORLISTAT**
- ▶ Pancreatin: hypoglycaemic effect of acarbose antagonised by **PANCREATIN**
- ▶ Progestogens: hypoglycaemic effect of antidiabetics antagonised by **PROGESTOGENS**
- Sulfinpyrazole: effects of sulfonyleureas enhanced by ● **SULFINPYRAZONE**
- ▶ Teriflunomide: plasma concentration of repaglinide increased by **TERIFLUNOMIDE**
- ▶ Testosterone: hypoglycaemic effect of antidiabetics possibly enhanced by **TESTOSTERONE**
- ▶ Ulcer-healing Drugs: excretion of metformin reduced by **CIMETIDINE** (increased plasma concentration); hypoglycaemic effect of sulfonyleureas enhanced by **CIMETIDINE**

**Antiepileptics** see Carbamazepine, Eslicarbazepine, Ethosuximide, Fosphenytoin, Gabapentin, Lacosamide, Lamotrigine, Levetiracetam, Oxcarbazepine, Perampanel, Phenobarbital, Phenytoin, Pregabalin, Primidone, Retigabine, Rufinamide, Sodium valproate, Stiripentol, Tiagabine, Topiramate, Valproic acid, Vigabatrin, and Zonisamide

**Antifungals** see Amphotericin; Antifungals, Imidazole; Antifungals, Triazole; Caspofungin; Flucytosine; Griseofulvin; Miconazole; Terbinafine

**Antifungals, Imidazole**

- ▶ Alcohol: possibility of disulfiram-like reaction when ketoconazole given with **ALCOHOL**
- ▶ Aliskiren: ketoconazole increases plasma concentration of **ALISKIREN**
- Alpha-blockers: ketoconazole possibly increases plasma concentration of **ALFUZOSIN**; ketoconazole increases plasma concentration of ● **TAMSULOSIN**
- Aminophylline: ketoconazole possibly increases plasma concentration of ● **AMINOPHYLLINE**
- Analgesics: ketoconazole inhibits metabolism of ● **BUPRENORPHINE** (reduce dose of buprenorphine); possible increased risk of ventricular arrhythmias when ketoconazole given with ● **METHADONE**—manufacturer of ketoconazole advises avoid concomitant use; ketoconazole increases plasma concentration of **OXYCODONE**; manufacturer of ketoconazole advises avoid concomitant use with **PARACETAMOL**
- ▶ Antacids: absorption of ketoconazole reduced by **ANTACIDS**
- ▶ Anthelmintics: ketoconazole increases plasma concentration of **PRAZIQUANTEL**
- Anti-arrhythmics: increased risk of ventricular arrhythmias when ketoconazole given with ● **DISOPYRAMIDE**—avoid concomitant use; ketoconazole increases plasma concentration of ● **DRONEDARONE**—avoid concomitant use
- Antibacterials: manufacturer of ketoconazole advises avoid concomitant ● **CLARITHROMYCIN** in severe renal impairment; metabolism of ketoconazole accelerated by ● **RIFAMPICIN** (reduced plasma concentration), also plasma concentration of rifampicin may be reduced by ketoconazole; ketoconazole increases plasma concentration of **BEDAQUILINE**—avoid concomitant use if ketoconazole given for more than 14 days; avoidance of ketoconazole advised by manufacturer of **FIDAXOMICIN**; plasma concentration of ketoconazole possibly reduced by **ISONIAZID**; ketoconazole increases the plasma concentration of ● **TELITHROMYCIN**—avoid in severe renal and hepatic impairment
- Anticoagulants: ketoconazole increases plasma concentration of ● **APIXABAN**—manufacturer of apixaban advises avoid concomitant use; miconazole enhances anticoagulant effect of ● **COUMARINS** (miconazole oral gel and possibly vaginal and topical formulations absorbed); ketoconazole enhances anticoagulant effect of ● **COUMARINS**; ketoconazole increases plasma concentration of ● **DABIGATRAN** and ● **RIVAROXABAN**—avoid concomitant use
- Antidepressants: avoidance of imidazoles advised by manufacturer of ● **REBOXETINE**; ketoconazole increases plasma concentration of **MIRTAZAPINE**
- Antidiabetics: miconazole enhances hypoglycaemic effect of ● **GLICLAZIDE** and ● **GLIPIZIDE**—avoid concomitant use;

**Antifungals, Imidazole**

- **Antidiabetics** (continued)
  - ketoconazole increases plasma concentration of **PIOGLITAZONE**, **SAXAGLIPITIN** and **TOLBUTAMIDE**; miconazole increases plasma concentration of ● **SULFONYLUREAS**
- **Antiepileptics**: miconazole possibly increases plasma concentration of **CARBAMAZEPINE**; plasma concentration of ketoconazole possibly reduced by **CARBAMAZEPINE**, also plasma concentration of carbamazepine possibly increased; plasma concentration of ketoconazole reduced by ● **FOSPHENYTOIN** and ● **PHENYTOIN**; miconazole enhances anticonvulsant effect of ● **FOSPHENYTOIN** and ● **PHENYTOIN** (plasma concentration of fosphenytoin and phenytoin increased); ketoconazole increases plasma concentration of **PERAMPANEL**
- **Antifungals**: imidazoles possibly antagonise effects of **AMPHOTERICIN**
- **Antihistamines**: imidazoles possibly inhibit metabolism of ● **MIZOLASTINE** (avoid concomitant use)
- **Antimalarials**: avoidance of imidazoles advised by manufacturer of ● **ARTEMETHER WITH LUMEFANTRINE**; avoidance of imidazoles advised by manufacturer of ● **ARTENIMOL WITH PIPERAQUINE** (possible risk of ventricular arrhythmias); ketoconazole increases plasma concentration of **MEFLOQUINE**
- **Antimuscarinics**: absorption of ketoconazole reduced by **ANTIMUSCARINICS**; ketoconazole increases plasma concentration of **DARIFENACIN**—avoid concomitant use; manufacturer of fesoterodine advises dose reduction when ketoconazole given with **FESOTERODINE**—consult fesoterodine product literature; ketoconazole increases plasma concentration of **OXYBUTYININ**; ketoconazole increases plasma concentration of ● **SOLIFENACIN**—see under Solifenacin, p. 670; avoidance of ketoconazole advised by manufacturer of ● **TOLTERODINE**
- **Antipsychotics**: ketoconazole inhibits metabolism of ● **ARIPRAZOLE** (reduce dose of aripiprazole); ketoconazole increases plasma concentration of ● **LURASIDONE**—avoid concomitant use; increased risk of ventricular arrhythmias when imidazoles given with ● **PIMOZIDE**—avoid concomitant use; imidazoles possibly increase plasma concentration of ● **QUETIAPINE**—manufacturer of quetiapine advises avoid concomitant use
- **Antivirals**: ketoconazole increases plasma concentration of ● **BOCEPREVIR**; ketoconazole increases the plasma concentration of ● **DACLATASVIR**—reduce dose of daclatasvir (see under Daclatasvir, p. 544); plasma concentration of both drugs increased when ketoconazole given with **DARUNAVIR**; plasma concentration of ketoconazole reduced by ● **EFAVIRENZ**; plasma concentration of ketoconazole increased by **FOSAMPRENAVIR** (also plasma concentration of fosamprenavir possibly increased); ketoconazole increases plasma concentration of ● **INDINAVIR** and ● **MARAVIROC** (consider reducing dose of indinavir and maraviroc); plasma concentration of ketoconazole reduced by ● **NEVIRAPINE**—avoid concomitant use; plasma concentration of ketoconazole increased by ● **RITONAVIR** (reduce dose of ketoconazole); imidazoles possibly increase plasma concentration of **SAQUINAVIR**; ketoconazole increases plasma concentration of ● **SAQUINAVIR**—manufacturer of ketoconazole advises avoid concomitant use; avoidance of ketoconazole advised by manufacturer of ● **SIMEPREVIR**; plasma concentration of both drugs possibly increased when ketoconazole given with **TELAPREVIR** (increased risk of ventricular arrhythmias)—reduce dose of ketoconazole
- **Anxiolytics and Hypnotics**: ketoconazole increases plasma concentration of ● **ALPRAZOLAM**—manufacturer of ketoconazole advises avoid concomitant use; ketoconazole increases plasma concentration of ● **MIDAZOLAM** (risk of prolonged sedation—avoid concomitant use of oral midazolam); ketoconazole increases plasma concentration of **ZOLPIDEM**
- **Appetitant**: ketoconazole increases plasma concentration of **APREPITANT**
- **Avanafil**: ketoconazole increases plasma concentration of ● **AVANAFIL**—avoid concomitant use

**Antifungals, Imidazole** (continued)

- **Beta-blockers**: ketoconazole possibly increases plasma concentration of **NADOLOL**
- **Bosentan**: ketoconazole increases plasma concentration of **BOSENTAN**
- **Calcium-channel Blockers**: ketoconazole inhibits metabolism of ● **FELODIPINE** (increased plasma concentration)—manufacturer of ketoconazole advises avoid concomitant use; avoidance of ketoconazole advised by manufacturer of **LERCANIDIPINE**; ketoconazole possibly inhibits metabolism of **DIHYDROPIRIDINES** (increased plasma concentration)
- **Cannabis Extract**: ketoconazole increases plasma concentration of **CANNABIS EXTRACT**
- **Ciclosporin**: ketoconazole inhibits metabolism of ● **CICLOSPORIN** (increased plasma concentration); miconazole possibly inhibits metabolism of ● **CICLOSPORIN** (increased plasma concentration)
- **Cilostazol**: ketoconazole increases plasma concentration of ● **CILOSTAZOL** (see under Cilostazol, p. 206)
- **Cinacalcet**: ketoconazole inhibits metabolism of **CINACALCET** (increased plasma concentration)
- **Clopidogrel**: ketoconazole possibly reduces antiplatelet effect of ● **CLOPIDOGREL**
- **Cobicistat**: plasma concentration of ketoconazole possibly increased by **COBICISTAT**—manufacturer of cobicistat advises reduce dose of ketoconazole
- **Colchicine**: ketoconazole possibly increases risk of ● **COLCHICINE** toxicity—suspend or reduce dose of colchicine (avoid concomitant use in hepatic or renal impairment)
- **Corticosteroids**: ketoconazole possibly inhibits metabolism of **CORTICOSTEROIDS**; ketoconazole increases the plasma concentration of *inhaled and oral* (and possibly also *intranasal and rectal*) ● **BUDESONIDE**; ketoconazole increases plasma concentration of active metabolite of ● **CICLESONIDE**; ketoconazole possibly increases plasma concentration of *inhaled* **FLUTICASONE**; ketoconazole inhibits the metabolism of **METHYLPREDNISOLONE**; ketoconazole increases plasma concentration of *inhaled* **MOMETASONE**
- **Cytotoxics**: ketoconazole inhibits the metabolism of **IFOSFAMIDE**; possible increased risk of neutropenia when ketoconazole given with ● **BRENTUXIMAB VEDOTIN**; ketoconazole possibly increases the plasma concentration of **AFATINIB**—manufacturer of afatinib advises separating administration of ketoconazole by 6 to 12 hours; ketoconazole increases plasma concentration of **AXITINIB** (reduce dose of axitinib—consult axitinib product literature); ketoconazole increases the plasma concentration of ● **BOSUTINIB**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib; ketoconazole increases plasma concentration of **BORTEZOMIB**, **CABOZANTINIB**, **DABRAFENIB**, **ETOPOSIDE**, **IDELALISIB**, **IMATINIB** and **PONATINIB**; ketoconazole increases plasma concentration of ● **CRIZOTINIB**, ● **LAPATINIB**, ● **NILOTINIB** and ● **REGORAFENIB**—avoid concomitant use; ketoconazole possibly increases plasma concentration of **DASATINIB**; ketoconazole inhibits metabolism of **ERLOTINIB** and **SUNITINIB** (increased plasma concentration); ketoconazole increases plasma concentration of ● **EVEROLIMUS**—manufacturer of ketoconazole advises avoid concomitant use; ketoconazole increases plasma concentration of ● **IBRUTINIB**—reduce dose of ibrutinib (see under Ibrutinib, p. 809); ketoconazole increases plasma concentration of ● **PAZOPANIB** (reduce dose of pazopanib); manufacturer of ruxolitinib advises dose reduction when ketoconazole given with ● **RUXOLITINIB**—consult ruxolitinib product literature; ketoconazole increases plasma concentration of active metabolite of ● **TEMSIROLIMUS**—avoid concomitant use; avoidance of ketoconazole advised by manufacturer of ● **CABAZITAXEL**; *in vitro* studies suggest a possible interaction between ketoconazole and **DOCETAXEL** (consult docetaxel product literature); ketoconazole reduces plasma concentration of ● **IRINOTECAN** (but concentration of active metabolite of irinotecan increased)—avoid concomitant use; ketoconazole increases plasma concentration of ● **VINFLUNINE**—manufacturer of vinflunine advises avoid concomitant use

**Antifungals, Imidazole** (continued)

- Dapoxetine: ketoconazole increases plasma concentration of
  - **DAPOXETINE**—manufacturer of dapoxetine advises avoid concomitant use
- Diuretics: ketoconazole increases plasma concentration of
  - **EPLERENONE**—avoid concomitant use
- Domperidone: manufacturer of ketoconazole advises avoid concomitant use with
  - **DOMPERIDONE** (risk of ventricular arrhythmias)
- Ergot Alkaloids: manufacturer of ketoconazole advises avoid concomitant use with
  - **ERGOT ALKALOIDS**; increased risk of ergotism when imidazoles given with
    - **ERGOTAMINE**—avoid concomitant use
- Fingolimod: ketoconazole increases plasma concentration of
  - **FINGOLIMOD**
- ▶ Fosaprepitant: ketoconazole increases plasma concentration of **FOSAPREPITANT**
- ▶ Hormone Antagonists: manufacturer of ketoconazole advises avoid concomitant use with **PASIREOTIDE**
- 5HT<sub>2</sub>-receptor Agonists: ketoconazole increases plasma concentration of **ALMOTRIPTAN** (increased risk of toxicity); ketoconazole increases plasma concentration of
  - **ELETRIPTAN** (risk of toxicity)—avoid concomitant use
- Ivabradine: ketoconazole increases plasma concentration of
  - **IVABRADINE**—avoid concomitant use
- Ivacaftor: ketoconazole increases plasma concentration of
  - **IVACFTOR** (see under Ivacaftor, p. 257)
- ▶ Lanthanum: absorption of ketoconazole possibly reduced by **LANTHANUM** (give at least 2 hours apart)
- Lenalidomide: ketoconazole possibly increases plasma concentration of
  - **LENALIDOMIDE** (increased risk of toxicity)
- Lipid-regulating Drugs: possible increased risk of myopathy when imidazoles given with **ATORVASTATIN**; possible increased risk of myopathy when ketoconazole given with
  - **ATORVASTATIN**—manufacturer of ketoconazole advises avoid concomitant use; increased risk of myopathy when ketoconazole given with
    - **SIMVASTATIN** (avoid concomitant use); possible increased risk of myopathy when miconazole given with
      - **SIMVASTATIN**; ketoconazole increases plasma concentration of
        - **LOMITAPIDE**—avoid concomitant use
  - ▶ Macitentan: ketoconazole increases plasma concentration of **MACITENTAN**
  - ▶ Mirabegron: when given with ketoconazole avoid or reduce dose of **MIRABEGRON** in hepatic or renal impairment—see Mirabegron, p. 671
  - Nintedanib: ketoconazole increases plasma concentration of
    - **NINTEDANIB**
  - ▶ Oestrogens: anecdotal reports of contraceptive failure when imidazoles given with **OESTROGENS**
  - ▶ Parasympathomimetics: ketoconazole increases plasma concentration of **GALANTAMINE**
  - Ranolazine: ketoconazole increases plasma concentration of
    - **RANOLAZINE**—avoid concomitant use
  - Retinoids: ketoconazole increases plasma concentration of **ALITRETINOIN**; ketoconazole possibly increases risk of
    - **TRETINOIN** toxicity
  - ▶ Riociguat: avoidance of ketoconazole advised by manufacturer of **RIOCIGUAT**
  - Sildenafil: ketoconazole increases plasma concentration of
    - **SILDENAFIL**—reduce initial dose of sildenafil for erectile dysfunction and avoid concomitant use of sildenafil for pulmonary hypertension
  - Sirolimus: ketoconazole increases plasma concentration of
    - **SIROLIMUS**—avoid concomitant use; miconazole increases plasma concentration of
      - **SIROLIMUS**
  - Sympathomimetics, Beta<sub>2</sub>: ketoconazole increases plasma concentration of **OLODATEROL**; ketoconazole inhibits metabolism of
    - **SALMETEROL** (increased plasma concentration)
  - Tacrolimus: ketoconazole increases plasma concentration of
    - **TACROLIMUS** (consider reducing dose of tacrolimus); miconazole *oral gel* possibly increases plasma concentration of
      - **TACROLIMUS**
  - Tadalafil: ketoconazole increases plasma concentration of
    - **TADALAFIL**—avoid concomitant use of tadalafil for pulmonary hypertension

**Antifungals, Imidazole** (continued)

- Theophylline: ketoconazole possibly increases plasma concentration of
  - **THEOPHYLLINE**
- Ticagrelor: ketoconazole increases plasma concentration of
  - **TICAGRELOR**—manufacturer of ticagrelor advises avoid concomitant use
- ▶ Tolvaptan: ketoconazole increases plasma concentration of **TOLVAPTAN**—manufacturer of ketoconazole advises avoid concomitant use
- ▶ Ulcer-healing Drugs: absorption of ketoconazole reduced by **HISTAMINE H<sub>2</sub>-ANTAGONISTS**, **PROTON PUMP INHIBITORS** and **SUCRALFATE**
- ▶ Ulipristal: ketoconazole increases plasma concentration of *low-dose* **ULIPRISTAL**—manufacturer of *low-dose* ulipristal advises avoid concomitant use
- Vardenafil: ketoconazole increases plasma concentration of
  - **VARDENAFIL**—avoid concomitant use
- ▶ Vitamins: miconazole possibly reduces effects of **ALFACALCIDOL**, **CALCITRIOL**, **COLECALCIFEROL**, **DIHYDROTACHYSTEROL**, **ERGOCALCIFEROL**, **PARICALCITOL** and **VITAMIN D**; ketoconazole possibly increases plasma concentration of **PARICALCITOL**

**Antifungals, Polyene** *see* Amphotericin**Antifungals, Triazole**

**NOTE** In general, fluconazole interactions relate to multiple-dose treatment

- Aliskiren: itraconazole increases plasma concentration of
  - **ALISKIREN**—avoid concomitant use
- Aminophylline: fluconazole possibly increases plasma concentration of
  - **AMINOPHYLLINE**
- Analgesics: fluconazole increases plasma concentration of **CELECOXIB** (halve dose of celecoxib); voriconazole increases plasma concentration of **DICLOFENAC**, **IBUPROFEN** and
  - **OXYCODONE**; fluconazole increases plasma concentration of **FLURBIPROFEN**, **IBUPROFEN** and **METHADONE**; fluconazole increases plasma concentration of **PARCOXIB** (reduce dose of parecoxib); voriconazole increases plasma concentration of
    - **ALFENTANIL** and
      - **METHADONE** (consider reducing dose of alfentanil and methadone); fluconazole inhibits metabolism of **ALFENTANIL** (risk of prolonged or delayed respiratory depression); itraconazole possibly inhibits metabolism of **ALFENTANIL**; triazoles possibly increase plasma concentration of
        - **FENTANYL**; itraconazole possibly increases plasma concentration of
          - **METHADONE** (increased risk of ventricular arrhythmias); itraconazole increases plasma concentration of **OXYCODONE**
    - ▶ Antacids: absorption of itraconazole reduced by **ANTACIDS**
    - Anti-arrhythmics: manufacturer of itraconazole advises avoid concomitant use with
      - **DISOPYRAMIDE**; avoidance of itraconazole, posaconazole and voriconazole advised by manufacturer of
        - **DRONEDARONE**
    - Antibacterials: plasma concentration of itraconazole increased by **CLARITHROMYCIN**; manufacturer of fluconazole advises avoid concomitant use with **ERYTHROMYCIN**; triazoles possibly increase plasma concentration of
      - **RIFABUTIN** (increased risk of uveitis—reduce rifabutin dose); posaconazole increases plasma concentration of
        - **RIFABUTIN** (also plasma concentration of posaconazole reduced); voriconazole increases plasma concentration of
          - **RIFABUTIN**, also rifabutin reduces plasma concentration of voriconazole (increase dose of voriconazole and also monitor for rifabutin toxicity); fluconazole increases plasma concentration of
            - **RIFABUTIN** (increased risk of uveitis—reduce rifabutin dose); plasma concentration of itraconazole reduced by
              - **RIFABUTIN** and
                - **RIFAMPICIN**—manufacturer of itraconazole advises avoid concomitant use; plasma concentration of posaconazole reduced by
                  - **RIFAMPICIN**; plasma concentration of voriconazole reduced by
                    - **RIFAMPICIN**—avoid concomitant use; metabolism of fluconazole accelerated by
                      - **RIFAMPICIN** (reduced plasma concentration); fluconazole possibly increases plasma concentration of **BEDAQUILINE**—avoid concomitant use if fluconazole given for more than 14 days
              - Anticoagulants: avoidance of itraconazole, posaconazole and voriconazole advised by manufacturer of **APIXABAN**; fluconazole, itraconazole and voriconazole enhance



**Antifungals, Triazole**

- Anticoagulants (continued)
  - anticoagulant effect of • **COUMARINS**; avoidance of itraconazole advised by manufacturer of **DABIGATRAN** and **RIVAROXABAN**; avoidance of posaconazole and voriconazole advised by manufacturer of **RIVAROXABAN**
- Antidepressants: avoidance of triazoles advised by manufacturer of • **REBOXETINE**; fluconazole possibly increases plasma concentration of **AMITRIPTYLINE** and **NORTRIPTYLINE**; plasma concentration of voriconazole reduced by • **ST JOHN'S WORT**—avoid concomitant use
- Anti-diabetics: posaconazole possibly enhances hypoglycaemic effect of **GLIPIZIDE**; fluconazole possibly enhances hypoglycaemic effect of **NATEGLINIDE**; itraconazole possibly enhances hypoglycaemic effect of **REPAGLINIDE**; fluconazole increases plasma concentration of • **SULFONYLUREAS**; voriconazole possibly increases plasma concentration of **SULFONYLUREAS**
- Antiepileptics: fluconazole possibly increases plasma concentration of **CARBAMAZEPINE**; plasma concentration of voriconazole possibly reduced by • **CARBAMAZEPINE**, • **PHENOBARBITAL** and • **PRIMIDONE**—avoid concomitant use; plasma concentration of itraconazole and posaconazole possibly reduced by • **CARBAMAZEPINE**; voriconazole increases plasma concentration of • **FOSPHENYTOIN** and • **PHENYTOIN**, also fosphenytoin and phenytoin reduces plasma concentration of voriconazole (increase dose of voriconazole and also monitor for fosphenytoin and phenytoin toxicity); plasma concentration of posaconazole reduced by • **FOSPHENYTOIN** and • **PHENYTOIN**; plasma concentration of itraconazole reduced by • **FOSPHENYTOIN** and • **PHENYTOIN**—avoid concomitant use; fluconazole increases plasma concentration of • **FOSPHENYTOIN** and • **PHENYTOIN** (consider reducing dose of fosphenytoin and phenytoin); plasma concentration of itraconazole and posaconazole possibly reduced by • **PHENOBARBITAL**; plasma concentration of itraconazole and posaconazole possibly reduced by • **PRIMIDONE**
- Antifungals: triazoles possibly antagonise effects of **AMPHOTERICIN**; monitoring for increased voriconazole side effects advised by manufacturer of **FLUCONAZOLE** if voriconazole given after fluconazole; plasma concentration of itraconazole increased by **MICAFUNGIN** (consider reducing dose of itraconazole); plasma concentration of fluconazole increased by **TERBINAFINE**
- Antihistamines: itraconazole inhibits metabolism of • **MIZOLASTINE**—avoid concomitant use
- Antimalarials: avoidance of triazoles advised by manufacturer of • **ARTEMETHER WITH LUMEFANTRINE**; avoidance of triazoles advised by manufacturer of • **ARTENIMOL WITH PIPERAQUINE** (possible risk of ventricular arrhythmias)
- Antimuscarinics: avoidance of itraconazole advised by manufacturer of **DARIFENACIN** and **TOLTERODINE**; manufacturer of fesoterodine advises dose reduction when itraconazole given with **FESOTERODINE**—consult fesoterodine product literature; itraconazole possibly increases plasma concentration of • **SOLIFENACIN**—see under Solifenacin, p. 670
- Antipsychotics: itraconazole possibly increases plasma concentration of **HALOPERIDOL**; itraconazole possibly increases plasma concentration of • **ARIPRAZOLE** (reduce dose of aripiprazole—consult aripiprazole product literature); itraconazole, posaconazole and voriconazole possibly increase plasma concentration of • **LURASIDONE**—avoid concomitant use; fluconazole possibly increases the plasma concentration of • **LURASIDONE** (see under Lurasidone, p. 315); increased risk of ventricular arrhythmias when triazoles given with • **PIMOZIDE**—avoid concomitant use; triazoles possibly increase plasma concentration of • **QUETIAPINE**—manufacturer of quetiapine advises avoid concomitant use; itraconazole possibly increases side-effects of **RISPERIDONE**
- Antivirals: plasma concentration of voriconazole increased or decreased by • **ATAZANAVIR** and plasma concentration of atazanavir also reduced; posaconazole increases plasma

**Antifungals, Triazole**

- Antivirals (continued)
  - concentration of • **ATAZANAVIR**; itraconazole, posaconazole and voriconazole possibly increase the plasma concentration of • **DACLATASVIR**—reduce dose of daclatasvir (see under Daclatasvir, p. 544); plasma concentration of voriconazole reduced by • **EFAVIRENZ**, also plasma concentration of efavirenz increased (increase voriconazole dose and reduce efavirenz dose); plasma concentration of itraconazole and posaconazole reduced by • **EFAVIRENZ**; plasma concentration of both drugs may increase when itraconazole given with **FOSAMPRENAVIR**; plasma concentration of posaconazole possibly reduced by **FOSAMPRENAVIR**; itraconazole increases plasma concentration of • **INDINAVIR** (consider reducing dose of indinavir); fluconazole increases plasma concentration of • **NEVIRAPINE**, **RITONAVIR** and **TIPRANAVIR**; plasma concentration of itraconazole possibly reduced by **NEVIRAPINE**—consider increasing dose of itraconazole; plasma concentration of voriconazole reduced by • **RITONAVIR**—avoid concomitant use; combination of itraconazole with • **RITONAVIR** may increase plasma concentration of either drug (or both); triazoles possibly increase plasma concentration of **SAQUINAVIR**; fluconazole, itraconazole, posaconazole and voriconazole possibly increase plasma concentration of • **SIMEPREVIR**—manufacturer of simeprevir advises avoid concomitant use; plasma concentration of voriconazole possibly affected by • **TELAPEVIR** (possible increased risk of ventricular arrhythmias); plasma concentration of posaconazole possibly increased by • **TELAPEVIR** (increased risk of ventricular arrhythmias); plasma concentration of itraconazole possibly increased by **TELAPEVIR**; fluconazole increases plasma concentration of • **ZIDOVUDINE** (increased risk of toxicity)
- Anxiolytics and Hypnotics: itraconazole increases plasma concentration of **ALPRAZOLAM**; fluconazole and voriconazole increase plasma concentration of • **DIAZEPAM** (risk of prolonged sedation); fluconazole, itraconazole, posaconazole and voriconazole increase plasma concentration of • **MIDAZOLAM** (risk of prolonged sedation); itraconazole increases plasma concentration of **BUSPIRONE** (reduce dose of buspirone)
- Avanafil: itraconazole and voriconazole possibly increase plasma concentration of • **AVANAFIL**—manufacturer of avanafil advises avoid concomitant use; fluconazole possibly increases plasma concentration of • **AVANAFIL**—see under Avanafil, p. 698
- Bosentan: fluconazole possibly increases plasma concentration of • **BOSENTAN**—avoid concomitant use; itraconazole possibly increases plasma concentration of **BOSENTAN**
- Calcium-channel Blockers: negative inotropic effect possibly increased when itraconazole given with **CALCIUM-CHANNEL BLOCKERS**; itraconazole inhibits metabolism of • **FELODIPINE** (increased plasma concentration); avoidance of itraconazole advised by manufacturer of **LERCANIDIPINE**; itraconazole possibly inhibits metabolism of **DIHYDROPYRIDINES** (increased plasma concentration)
- Cardiac Glycosides: itraconazole increases plasma concentration of • **DIGOXIN**
- Ciclosporin: fluconazole, itraconazole, posaconazole and voriconazole inhibit metabolism of • **CICLOSPORIN** (increased plasma concentration)
- Cilostazol: itraconazole possibly increases plasma concentration of • **CILOSTAZOL** (see under Cilostazol, p. 206)
- Clopidogrel: fluconazole, itraconazole and voriconazole possibly reduce antiplatelet effect of • **CLOPIDOGREL**
- Cobicistat: plasma concentration of itraconazole possibly increased by **COBICISTAT**—manufacturer of cobicistat advises reduce dose of itraconazole
- Colchicine: itraconazole possibly increases risk of • **COLCHICINE** toxicity—suspend or reduce dose of colchicine (avoid concomitant use in hepatic or renal impairment)
- Corticosteroids: itraconazole possibly inhibits metabolism of **CORTICOSTEROIDS** and **METHYLPREDNISOLONE**; itraconazole increases the plasma concentration of *inhaled* and *oral* (and

**Antifungals, Triazole**

- Corticosteroids (continued) possibly also *intranasal* and *rectal*) • **BUDESONIDE**; itraconazole increases plasma concentration of *inhaled* **FLUTICASON**
- Cytotoxics: itraconazole inhibits metabolism of **BUSULFAN** (increased risk of toxicity); fluconazole and itraconazole possibly increase side-effects of **CYCLOPHOSPHAMIDE**; itraconazole possibly increases the plasma concentration of **AFATINIB**—manufacturer of afatinib advises separating administration of itraconazole by 6 to 12 hours; itraconazole possibly increases plasma concentration of **AXITINIB** (reduce dose of axitinib—consult axitinib product literature); fluconazole, itraconazole, posaconazole and voriconazole possibly increase the plasma concentration of • **BOSUTINIB**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib; itraconazole possibly increases plasma concentration of **CABOZANTINIB**; itraconazole and voriconazole possibly increase plasma concentration of • **CRIZOTINIB**—manufacturer of crizotinib advises avoid concomitant use; avoidance of itraconazole advised by manufacturer of **DASATINIB** and • **TEMSIROLIMUS** (plasma concentration of dasatinib and temsirolimus possibly increased); itraconazole, posaconazole and voriconazole possibly increase plasma concentration of • **EVEROLIMUS**—manufacturer of everolimus advises avoid concomitant use; itraconazole increases plasma concentration of **GEFITINIB**; fluconazole, itraconazole and voriconazole possibly increase the plasma concentration of • **IBRUTINIB**—reduce dose of ibrutinib (see under Ibrutinib, p. 809); avoidance of itraconazole, posaconazole and voriconazole advised by manufacturer of • **LAPATINIB**; avoidance of itraconazole and voriconazole advised by manufacturer of • **NILOTINIB**; itraconazole and voriconazole possibly increase plasma concentration of • **PAZOPANIB** (reduce dose of pazopanib); itraconazole and voriconazole possibly increase plasma concentration of **PONATINIB**—consider reducing initial dose of ponatinib (see under Ponatinib, p. 814); manufacturer of ruxolitinib advises dose reduction when fluconazole, itraconazole, posaconazole and voriconazole given with • **RUXOLITINIB**—consult ruxolitinib product literature; itraconazole and voriconazole possibly increase the plasma concentration of • **CABAZITAXEL**—manufacturer of cabazitaxel advises avoid or consider reducing dose of cabazitaxel; itraconazole and voriconazole possibly increase plasma concentration of • **DOCETAXEL**—manufacturer of docetaxel advises avoid concomitant use or consider reducing docetaxel dose; increased risk of toxicity when itraconazole given with • **IRINOTECAN**—avoid concomitant use; itraconazole possibly increases risk of • **VINBLASTINE**, • **VINDESINE**, • **VINFLUNINE** and • **VINORELBINE** toxicity; posaconazole possibly inhibits metabolism of • **VINBLASTINE** and • **VINCISTINE** (increased risk of neurotoxicity); itraconazole increases risk of • **VINCISTINE** toxicity
- Dapoxetine: manufacturer of dapoxetine advises dose reduction when fluconazole given with **DAPOXETINE** (see under Dapoxetine, p. 703); avoidance of itraconazole advised by manufacturer of • **DAPOXETINE** (increased risk of toxicity)
- Diuretics: fluconazole increases plasma concentration of **EPLERENONE** (reduce dose of eplerenone); itraconazole increases plasma concentration of • **EPLERENONE**—avoid concomitant use; plasma concentration of fluconazole increased by **HYDROCHLOROTHIAZIDE**
- Dompriperone: possible increased risk of ventricular arrhythmias when itraconazole or voriconazole given with • **DOMPERIDONE**—avoid concomitant use
- Ergot Alkaloids: increased risk of ergotism when voriconazole given with • **ERGOMETRINE**—avoid concomitant use; manufacturer of itraconazole advises avoid concomitant use with • **ERGOMETRINE** (increased risk of ergotism); increased risk of ergotism when triazoles given with • **ERGOTAMINE**—avoid concomitant use
- 5HT<sub>2</sub>-receptor Agonists: itraconazole increases plasma concentration of • **ELETRIPTAN** (risk of toxicity)—avoid concomitant use

**Antifungals, Triazole (continued)**

- Ivabradine: fluconazole increases plasma concentration of **IVABRADINE**—reduce initial dose of ivabradine; itraconazole possibly increases plasma concentration of • **IVABRADINE**—avoid concomitant use
- Ivacaftor: itraconazole, posaconazole and voriconazole possibly increase plasma concentration of • **IVACAFTOR** (see under Ivacaftor, p. 257); fluconazole increases plasma concentration of • **IVACAFTOR** (see under Ivacaftor, p. 257)
- Lenalidomide: itraconazole possibly increases plasma concentration of • **LENALIDOMIDE** (increased risk of toxicity)
  - ▶ Leukotriene Receptor Antagonists: fluconazole increases plasma concentration of **ZAFIRLUKAST**
- Lipid-regulating Drugs: increased risk of myopathy when itraconazole, posaconazole or voriconazole given with • **ATORVASTATIN**; possible increased risk of myopathy when fluconazole given with • **ATORVASTATIN** or • **SIMVASTATIN**; fluconazole increases plasma concentration of **FLUVASTATIN**—possible increased risk of myopathy; itraconazole increases plasma concentration of • **ROSUVASTATIN**—adjust dose of rosuvastatin (consult product literature); increased risk of myopathy when itraconazole or posaconazole given with • **SIMVASTATIN** (avoid concomitant use); increased risk of myopathy when voriconazole given with • **SIMVASTATIN**; avoidance of triazoles advised by manufacturer of • **LOMITAPIDE** (plasma concentration of lomitapide possibly increased)
  - ▶ Mirabegron: when given with itraconazole avoid or reduce dose of **MIRABEGRON** in hepatic or renal impairment—see Mirabegron, p. 671
- Oestrogens: plasma concentration of voriconazole increased by **OESTROGENS**
- Progestogens: plasma concentration of voriconazole possibly increased by **PROGESTOGENS**
- Ranolazine: itraconazole, posaconazole and voriconazole possibly increase plasma concentration of • **RANOLAZINE**—manufacturer of ranolazine advises avoid concomitant use
- Retinoids: fluconazole and voriconazole possibly increase risk of • **TRETINOIN** toxicity
  - ▶ Riociguat: avoidance of itraconazole and voriconazole advised by manufacturer of **RIOCIQUAT**
- Sildenafil: itraconazole increases plasma concentration of **SILDENAFIL**—reduce initial dose of sildenafil
- Sirolimus: fluconazole and posaconazole possibly increase plasma concentration of **SIROLIMUS**; itraconazole and voriconazole increase plasma concentration of • **SIROLIMUS**—avoid concomitant use
- Tacrolimus: fluconazole, itraconazole, posaconazole and voriconazole increase plasma concentration of • **TACROLIMUS** (consider reducing dose of tacrolimus)
- Tadalafil: itraconazole possibly increases plasma concentration of **TADALAFIL**
- Theophylline: fluconazole possibly increases plasma concentration of • **THEOPHYLLINE**
- Ulcer-healing Drugs: plasma concentration of posaconazole reduced by • **CIMETIDINE** and • **ESOMEPRAZOLE**—manufacturer of posaconazole *suspension* advises avoid concomitant use; plasma concentration of posaconazole possibly reduced by • **FAMOTIDINE**, • **LANSOPRAZOLE**, • **NIZATIDINE**, • **OMEPRAZOLE**, • **PANTOPRAZOLE**, • **RABEPRAZOLE** and • **RANITIDINE**—manufacturer of posaconazole *suspension* advises avoid concomitant use; voriconazole possibly increases plasma concentration of **ESOMEPRAZOLE**; voriconazole increases plasma concentration of **OMEPRAZOLE** (consider reducing dose of omeprazole); absorption of itraconazole reduced by **HISTAMINE H<sub>2</sub>-ANTAGONISTS** and **PROTON PUMP INHIBITORS**
- ▶ Ulipristal: avoidance of itraconazole advised by manufacturer of **ULIPRISTAL**
- Vardenafil: itraconazole possibly increases plasma concentration of • **VARDEFIL**—avoid concomitant use

**Antihistamines**

**NOTE** Sedative interactions apply to a lesser extent to the non-sedating antihistamines. Interactions do not generally apply to antihistamines used for topical action (including inhalation)

**Antihistamines** (continued)

- Alcohol: increased sedative effect when antihistamines given with **ALCOHOL** (possibly less effect with non-sedating antihistamines)
- Analgesics: sedative effects possibly increased when sedating antihistamines given with • **OPIOID ANALGESICS**
- Antacids: absorption of fexofenadine reduced by **ANTACIDS**
- Anti-arrhythmics: increased risk of ventricular arrhythmias when mizolastine given with • **AMIODARONE**, • **DISOPYRAMIDE** or • **FLECAINIDE**—avoid concomitant use; manufacturer of mizolastine advises avoid concomitant use with **PROPAFENONE** (possible risk of ventricular arrhythmias)
- Antibacterials: manufacturer of loratadine advises plasma concentration possibly increased by **ERYTHROMYCIN**; metabolism of mizolastine inhibited by • **ERYTHROMYCIN**—avoid concomitant use; increased risk of ventricular arrhythmias when mizolastine given with • **MOXIFLOXACIN**—avoid concomitant use; effects of fexofenadine possibly reduced by **RIFAMPICIN**; metabolism of mizolastine possibly inhibited by • **MACROLIDES** (avoid concomitant use)
- Antidepressants: avoidance of mizolastine advised by manufacturer of • **CITALOPRAM** and • **ESCITALOPRAM** (risk of ventricular arrhythmias); increased antimuscarinic and sedative effects when antihistamines given with **MAOIs** or **TRICYCLICS**; manufacturer of promethazine advises avoid for 2 weeks after stopping **MAOIs**; manufacturer of hydroxyzine advises avoid concomitant use with **MAOIs**; cyproheptadine possibly antagonises antidepressant effect of **SSRIs**; possible increased antimuscarinic and sedative effects when antihistamines given with **TRICYCLIC-RELATED ANTIDEPRESSANTS**
- Antidiabetics: thrombocyte count depressed when ketotifen given with **METFORMIN** (manufacturer of ketotifen advises avoid concomitant use)
- Antifungals: metabolism of mizolastine inhibited by • **ITRACONAZOLE**—avoid concomitant use; metabolism of mizolastine possibly inhibited by • **IMIDAZOLES** (avoid concomitant use)
- Antimalarials: avoidance of mizolastine advised by manufacturer of • **ARTENIMOL WITH PIPERAQUINE** (possible risk of ventricular arrhythmias)
- Antimuscarinics: increased risk of antimuscarinic side-effects when antihistamines given with **ANTIMUSCARINICS**
- Antivirals: plasma concentration of chlorphenamine possibly increased by **LOPINAVIR**; plasma concentration of non-sedating antihistamines possibly increased by **RITONAVIR**; increased risk of ventricular arrhythmias when mizolastine given with • **SAQUINAVIR**—avoid concomitant use
- Anxiolytics and Hypnotics: increased sedative effect when antihistamines given with **ANXIOLYTICS AND HYPNOTICS**
- Beta-blockers: increased risk of ventricular arrhythmias when mizolastine given with • **SOTALOL**—avoid concomitant use
- Betahistine: antihistamines theoretically antagonise effect of **BETAHISTINE**
- Cytotoxics: possible increased risk of ventricular arrhythmias when mizolastine given with • **VANDETANIB**—avoid concomitant use
- Grapefruit Juice: plasma concentration of bilastine reduced by **GRAPEFRUIT JUICE**
- Histamine: antihistamines theoretically antagonise effects of **HISTAMINE**—manufacturer of histamine advises avoid concomitant use
- Ulcer-healing Drugs: manufacturer of loratadine advises plasma concentration possibly increased by **CIMETIDINE**; plasma concentration of hydroxyzine increased by **CIMETIDINE**
- Ulipristal: manufacturer of ulipristal advises give fexofenadine at least 1.5 hours before or after **ULIPRISTAL**

**Antihistamines, Non-sedating** see Antihistamines**Antihistamines, Sedating** see Antihistamines

**Antimalarials** see Artemether with Lumefantrine, Artemimol with Pипeraquine, Chloroquine, Hydroxychloroquine, Mefloquine, Primaquine, Proguanil, Pyrimethamine, and Quinine

**Antimetabolites** see Capecitabine, Cladribine, Cytarabine, Decitabine, Fludarabine, Fluorouracil, Gemcitabine,

**Antimetabolites** (continued)

Mercaptopurine, Methotrexate, Pemetrexed, Raltitrexed, Tegafur, and Tioguanine

**Antimuscarinics**

- NOTE** Many drugs have antimuscarinic effects; concomitant use of two or more such drugs can increase side-effects such as dry mouth, urine retention, and constipation; concomitant use can also lead to confusion in the elderly. Interactions do not generally apply to antimuscarinics used by inhalation
- Alcohol: increased sedative effect when hyoscine given with **ALCOHOL**
  - Analgesics: possible increased risk of antimuscarinic side-effects when antimuscarinics given with **CODEINE**; increased risk of antimuscarinic side-effects when antimuscarinics given with **NEFOPAM**
  - Anti-arrhythmics: increased risk of ventricular arrhythmias when tolterodine given with • **AMIODARONE**, • **DISOPYRAMIDE** or • **FLECAINIDE**; increased risk of antimuscarinic side-effects when antimuscarinics given with **DISOPYRAMIDE**
  - Antibacterials: manufacturer of fesoterodine advises dose reduction when fesoterodine given with **CLARITHROMYCIN** and **TELITHROMYCIN**—consult fesoterodine product literature; manufacturer of tolterodine advises avoid concomitant use with **CLARITHROMYCIN** and **ERYTHROMYCIN**; plasma concentration of darifenacin possibly increased by **ERYTHROMYCIN**; plasma concentration of active metabolite of fesoterodine reduced by **RIFAMPICIN**
  - Antidepressants: plasma concentration of darifenacin and procyclidine increased by **PAROXETINE**; increased risk of antimuscarinic side-effects when antimuscarinics given with **MAOIs** or **TRICYCLICS**; possible increased antimuscarinic side-effects when antimuscarinics given with **TRICYCLIC-RELATED ANTIDEPRESSANTS**
  - Antifungals: antimuscarinics reduce absorption of **KETOCONAZOLE**; manufacturer of fesoterodine advises dose reduction when fesoterodine given with **ITRACONAZOLE** and **KETOCONAZOLE**—consult fesoterodine product literature; plasma concentration of darifenacin increased by **KETOCONAZOLE**—avoid concomitant use; plasma concentration of solifenacin increased by • **KETOCONAZOLE**—see under Solifenacin, p. 670; plasma concentration of oxybutynin increased by **KETOCONAZOLE**; manufacturer of tolterodine advises avoid concomitant use with **ITRACONAZOLE** and • **KETOCONAZOLE**; manufacturer of darifenacin advises avoid concomitant use with **ITRACONAZOLE**; plasma concentration of solifenacin possibly increased by • **ITRACONAZOLE**—see under Solifenacin, p. 670
  - Antihistamines: increased risk of antimuscarinic side-effects when antimuscarinics given with **ANTIHISTAMINES**
  - Antipsychotics: antimuscarinics possibly reduce effects of **HALOPERIDOL**; increased risk of antimuscarinic side-effects when antimuscarinics given with **CLOZAPINE**; antimuscarinics reduce plasma concentration of **PHENOTHAZINES**, but risk of antimuscarinic side-effects increased
  - Antivirals: manufacturer of fesoterodine advises dose reduction when fesoterodine given with **ATAZANAVIR**, **INDINAVIR**, **RITONAVIR** and **SAQUINAVIR**—consult fesoterodine product literature; manufacturer of darifenacin advises avoid concomitant use with **ATAZANAVIR**, **FOSAMPRENAVIR**, **INDINAVIR**, **LOPINAVIR**, **RITONAVIR**, **SAQUINAVIR** and **TIPRANAVIR**; manufacturer of tolterodine advises avoid concomitant use with **FOSAMPRENAVIR**, **INDINAVIR**, **LOPINAVIR**, **RITONAVIR** and **SAQUINAVIR**; plasma concentration of solifenacin possibly increased by • **RITONAVIR**—see under Solifenacin, p. 670
  - Beta-blockers: increased risk of ventricular arrhythmias when tolterodine given with • **SOTALOL**
  - Calcium-channel Blockers: plasma concentration of solifenacin increased by **VERAPAMIL**; manufacturer of darifenacin advises avoid concomitant use with **VERAPAMIL**
  - Cardiac Glycosides: darifenacin possibly increases plasma concentration of **DIGOXIN**
  - Ciclosporin: manufacturer of darifenacin advises avoid concomitant use with **CICLOSPORIN**
  - Domperidone: antimuscarinics antagonise effects of **DOMPERIDONE** on gastro-intestinal activity

**Antimuscarinics** (continued)

- ▶ Dopaminergics: antimuscarinics possibly reduce absorption of **CO-BENELDOPA**, **CO-CARELDOPA** and **LEVODOPA**
- ▶ Hormone Antagonists: possible increased risk of bradycardia when ipratropium or oxybutynin given with **PASIREOTIDE**
- ▶ Memantine: effects of antimuscarinics possibly enhanced by **MEMANTINE**
- ▶ Metoclopramide: antimuscarinics antagonise effects of **METOCLOPRAMIDE** on gastro-intestinal activity
- ▶ Nitrates: antimuscarinics possibly reduce effects of sublingual tablets of **NITRATES** (failure to dissolve under tongue owing to dry mouth)
- ▶ Parasympathomimetics: antimuscarinics antagonise effects of **PARASYMPATHOMIMETICS**

**Antipsychotics**

- NOTE Increased risk of toxicity with myelosuppressive drugs
- NOTE Avoid concomitant use of clozapine with drugs that have a substantial potential for causing agranulocytosis
- ▶ ACE Inhibitors: enhanced hypotensive effect when antipsychotics given with **ACE INHIBITORS**
- ▶ Adrenergic Neurone Blockers: enhanced hypotensive effect when phenothiazines given with **ADRENERGIC NEURONE BLOCKERS**; higher doses of chlorpromazine antagonise hypotensive effect of **ADRENERGIC NEURONE BLOCKERS**; haloperidol antagonises hypotensive effect of **ADRENERGIC NEURONE BLOCKERS**
- ▶ Adsorbents: absorption of phenothiazines possibly reduced by **KAOLIN**
- ▶ Alcohol: increased sedative effect when antipsychotics given with **ALCOHOL**
- ▶ Alpha-blockers: enhanced hypotensive effect when antipsychotics given with **ALPHA-BLOCKERS**
- Anaesthetics, General: droperidol enhances effects of **THIOPIENTAL**; enhanced hypotensive effect when antipsychotics given with ● **GENERAL ANAESTHETICS**
- Analgesics: possible severe drowsiness when haloperidol given with **ACEMETACIN** or **INDOMETACIN**; increased risk of ventricular arrhythmias when antipsychotics that prolong the QT interval given with ● **METHADONE**; increased risk of ventricular arrhythmias when amisulpride given with ● **METHADONE**—avoid concomitant use; increased risk of convulsions when antipsychotics given with **TRAMADOL**; enhanced hypotensive and sedative effects when antipsychotics given with **OPIOID ANALGESICS**
- ▶ Angiotensin-II Receptor Antagonists: enhanced hypotensive effect when antipsychotics given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- ▶ Antacids: absorption of phenothiazines and sulpiride reduced by **ANTACIDS**
- Anti-arrhythmics: increased risk of ventricular arrhythmias when antipsychotics that prolong the QT interval given with ● **ANTI-ARRHYTHMICS** that prolong the QT interval; increased risk of ventricular arrhythmias when amisulpride, droperidol, haloperidol, phenothiazines, pimozide or zuclopenthixol given with ● **AMIODARONE**—avoid concomitant use; increased risk of ventricular arrhythmias when benperidol given with ● **AMIODARONE**—manufacturer of benperidol advises avoid concomitant use; increased risk of ventricular arrhythmias when sulpiride given with ● **AMIODARONE** or ● **DISOPYRAMIDE**; increased risk of ventricular arrhythmias when amisulpride, droperidol, pimozide or zuclopenthixol given with ● **DISOPYRAMIDE**—avoid concomitant use; possible increased risk of ventricular arrhythmias when haloperidol given with ● **DISOPYRAMIDE**—avoid concomitant use; increased risk of ventricular arrhythmias when phenothiazines given with ● **DISOPYRAMIDE**; avoidance of phenothiazines advised by manufacturer of ● **DRONEDARONE** (risk of ventricular arrhythmias); increased risk of arrhythmias when clozapine given with ● **FLECAINIDE**
- Antibacterials: plasma concentration of lurasidone possibly increased by ● **CLARITHROMYCIN** and ● **TELITHROMYCIN**—avoid concomitant use; increased risk of ventricular arrhythmias when pimozide given with ● **CLARITHROMYCIN**, ● **MOXIFLOXACIN** or ● **TELITHROMYCIN**—avoid concomitant use; plasma concentration of quetiapine possibly increased by ● **CLARITHROMYCIN**—manufacturer of quetiapine advises avoid

**Antipsychotics**

- Antibacterials (continued)
- concomitant use; plasma concentration of lurasidone possibly increased by ● **ERYTHROMYCIN** (see under Lurasidone, p. 315); increased risk of ventricular arrhythmias when amisulpride given with ● **ERYTHROMYCIN**—avoid concomitant use; plasma concentration of clozapine possibly increased by ● **ERYTHROMYCIN** (possible increased risk of convulsions); possible increased risk of ventricular arrhythmias when pimozide given with ● **ERYTHROMYCIN**—avoid concomitant use; plasma concentration of quetiapine increased by ● **ERYTHROMYCIN**—manufacturer of quetiapine advises avoid concomitant use; increased risk of ventricular arrhythmias when sulpiride given with *parenteral* ● **ERYTHROMYCIN**; increased risk of ventricular arrhythmias when zuclopenthixol given with *parenteral* ● **ERYTHROMYCIN**—avoid concomitant use; plasma concentration of clozapine increased by ● **CIPROFLOXACIN**; plasma concentration of olanzapine possibly increased by ● **CIPROFLOXACIN**; increased risk of ventricular arrhythmias when droperidol, haloperidol, phenothiazines or zuclopenthixol given with ● **MOXIFLOXACIN**—avoid concomitant use; increased risk of ventricular arrhythmias when benperidol given with ● **MOXIFLOXACIN**—manufacturer of benperidol advises avoid concomitant use; plasma concentration of aripiprazole possibly reduced by ● **RIFABUTIN** and ● **RIFAMPICIN** (avoid concomitant use or consider increasing the dose of aripiprazole—consult aripiprazole product literature); plasma concentration of lurasidone reduced by ● **RIFAMPICIN**—avoid concomitant use; plasma concentration of clozapine possibly reduced by ● **RIFAMPICIN**; metabolism of haloperidol accelerated by ● **RIFAMPICIN** (reduced plasma concentration); avoid concomitant use of clozapine with ● **CHLORAMPHENICOL** or ● **SULFONAMIDES** (increased risk of agranulocytosis); increased risk of ventricular arrhythmias when droperidol, haloperidol or pimozide given with ● **DELAMANID**; increased risk of ventricular arrhythmias when phenothiazines that prolong the QT interval given with ● **DELAMANID**; manufacturer of droperidol advises avoid concomitant use with ● **MACROLIDES** (risk of ventricular arrhythmias); possible increased risk of ventricular arrhythmias when chlorpromazine given with ● **TELITHROMYCIN**; plasma concentration of quetiapine possibly increased by **TELITHROMYCIN**
- Antidepressants: plasma concentration of clozapine possibly increased by **CITALOPRAM** (increased risk of toxicity); avoidance of haloperidol, phenothiazines and pimozide advised by manufacturer of ● **CITALOPRAM** (risk of ventricular arrhythmias); avoidance of haloperidol, phenothiazines and pimozide advised by manufacturer of ● **ESCITALOPRAM** (risk of ventricular arrhythmias); plasma concentration of aripiprazole possibly increased by ● **FLUOXETINE** and ● **PAROXETINE** (reduce dose of aripiprazole—consult aripiprazole product literature); plasma concentration of clozapine, haloperidol and risperidone increased by ● **FLUOXETINE**; manufacturer of droperidol advises avoid concomitant use with ● **FLUOXETINE**, ● **FLUVOXAMINE**, ● **SERTRALINE** and ● **TRICYCLICS** (risk of ventricular arrhythmias); plasma concentration of asenapine and haloperidol possibly increased by **FLUVOXAMINE**; plasma concentration of clozapine and olanzapine increased by ● **FLUVOXAMINE**; asenapine possibly increases plasma concentration of **PAROXETINE**; plasma concentration of clozapine increased by ● **PAROXETINE** and ● **SERTRALINE**; plasma concentration of risperidone possibly increased by **PAROXETINE** (increased risk of toxicity); metabolism of perphenazine inhibited by **PAROXETINE** (reduce dose of perphenazine); plasma concentration of haloperidol increased by **VENLAFAXINE**; clozapine possibly increases CNS effects of ● **MAOIS**; plasma concentration of pimozide possibly increased by ● **SSRIS** (increased risk of ventricular arrhythmias—avoid concomitant use); plasma concentration of lurasidone possibly reduced by ● **ST JOHN'S WORT**—avoid concomitant use; plasma concentration of aripiprazole possibly reduced by ● **ST JOHN'S WORT** (avoid concomitant use or consider increasing the dose of aripiprazole—consult



**Antipsychotics**

- Antidepressants (continued)
  - aripiprazole product literature); manufacturer of fluphenazine, haloperidol, sulpiride and zuclopenthixol advises avoid concomitant use with • **TRICYCLICS** (risk of ventricular arrhythmias); increased risk of antimuscarinic side-effects when phenothiazines given with **TRICYCLICS**; possible increased risk of ventricular arrhythmias when risperidone given with • **TRICYCLICS**; possible increased antimuscarinic side-effects when clozapine given with **TRICYCLICS**
- Antidiabetics: phenothiazines possibly antagonise hypoglycaemic effect of **SULFONYLUREAS**
- Antiepileptics: antipsychotics antagonise anticonvulsant effect of • **ANTIEPILEPTICS** (convulsive threshold lowered); metabolism of haloperidol, olanzapine, quetiapine and risperidone accelerated by **CARBAMAZEPINE** (reduced plasma concentration); metabolism of clozapine accelerated by • **CARBAMAZEPINE** (reduced plasma concentration), also avoid concomitant use of drugs with substantial potential for causing agranulocytosis; plasma concentration of aripiprazole reduced by • **CARBAMAZEPINE** (avoid concomitant use or consider increasing the dose of aripiprazole—consult aripiprazole product literature); plasma concentration of paliperidone reduced by **CARBAMAZEPINE**; plasma concentration of lurasidone possibly reduced by • **CARBAMAZEPINE**, • **FOSPHENYTOIN**, • **PHENOBARBITAL**, • **PHENYTOIN** and • **PRIMIDONE**—avoid concomitant use; chlorpromazine possibly increases or decreases plasma concentration of **FOSPHENYTOIN** and **PHENYTOIN**; metabolism of clozapine and quetiapine accelerated by **FOSPHENYTOIN** (reduced plasma concentration); plasma concentration of aripiprazole possibly reduced by • **FOSPHENYTOIN**, • **PHENOBARBITAL**, • **PHENYTOIN** and • **PRIMIDONE** (avoid concomitant use or consider increasing the dose of aripiprazole—consult aripiprazole product literature); plasma concentration of haloperidol reduced by **FOSPHENYTOIN** and **PHENYTOIN**; metabolism of haloperidol accelerated by **PHENOBARBITAL** and **PRIMIDONE** (reduced plasma concentration); plasma concentration of both drugs reduced when chlorpromazine given with **PHENOBARBITAL** and **PRIMIDONE**; plasma concentration of clozapine possibly reduced by **PHENOBARBITAL** and **PRIMIDONE**; metabolism of clozapine and quetiapine accelerated by **PHENYTOIN** (reduced plasma concentration); increased risk of side-effects including neutropenia when olanzapine given with • **SODIUM VALPROATE** and • **VALPROIC ACID**; plasma concentration of clozapine possibly increased or decreased by **SODIUM VALPROATE** and **VALPROIC ACID**
- Antifungals: plasma concentration of lurasidone increased by • **KETOCONAZOLE**—avoid concomitant use; metabolism of aripiprazole inhibited by • **KETOCONAZOLE** (reduce dose of aripiprazole); plasma concentration of lurasidone possibly increased by • **FLUCONAZOLE** (see under Lurasidone, p. 315); plasma concentration of lurasidone possibly increased by • **ITRACONAZOLE**, • **POSACONAZOLE** and • **VORICONAZOLE**—avoid concomitant use; plasma concentration of aripiprazole possibly increased by • **ITRACONAZOLE** (reduce dose of aripiprazole—consult aripiprazole product literature); side-effects of risperidone possibly increased by **ITRACONAZOLE**; plasma concentration of haloperidol possibly increased by **ITRACONAZOLE**; increased risk of ventricular arrhythmias when pimozide given with • **IMIDAZOLES** or • **TRIAZOLES**—avoid concomitant use; plasma concentration of quetiapine possibly increased by • **IMIDAZOLES** and • **TRIAZOLES**—manufacturer of quetiapine advises avoid concomitant use
- Antimalarials: avoidance of antipsychotics advised by manufacturer of • **ARTEMETHER WITH LUMEFANTRINE**; avoidance of droperidol, haloperidol, phenothiazines and pimozide advised by manufacturer of • **ARTENIMOL WITH PIPERAQUINE** (possible risk of ventricular arrhythmias); increased risk of ventricular arrhythmias when droperidol given with • **CHLOROQUINE**, • **HYDROXYCHLOROQUINE** or • **QUININE**—avoid concomitant use; possible increased risk of ventricular arrhythmias when haloperidol given with • **MEFLOQUINE** or

**Antipsychotics**

- Antimalarials (continued)
  - **QUININE**—avoid concomitant use; manufacturer of risperidone advises possible risk of ventricular arrhythmias when risperidone given with • **MEFLOQUINE**; increased risk of ventricular arrhythmias when pimozide given with • **MEFLOQUINE** or • **QUININE**—avoid concomitant use; manufacturer of amisulpride advises avoid concomitant use with **MEFLOQUINE**; possible increased risk of ventricular arrhythmias when risperidone given with • **QUININE**
- Antimuscarinics: increased risk of antimuscarinic side-effects when clozapine given with **ANTIMUSCARINICS**; plasma concentration of phenothiazines reduced by **ANTIMUSCARINICS**, but risk of antimuscarinic side-effects increased; effects of haloperidol possibly reduced by **ANTIMUSCARINICS**
- Antipsychotics: increased risk of ventricular arrhythmias when amisulpride, pimozide or sulpiride given with • **DROPERIDOL**—avoid concomitant use; increased risk of ventricular arrhythmias when phenothiazines that prolong the QT interval given with • **DROPERIDOL**—avoid concomitant use; avoid concomitant use of clozapine with depot formulation of • **FLUPENTIXOL**, • **FLUPHENAZINE**, • **HALOPERIDOL**, • **PIPOTIAZINE**, • **RISPERIDONE** or • **ZUCLOPENTHIXOL** as cannot be withdrawn quickly if neutropenia occurs; increased risk of ventricular arrhythmias when sulpiride given with • **HALOPERIDOL**; chlorpromazine possibly increases plasma concentration of **HALOPERIDOL**; increased risk of ventricular arrhythmias when droperidol given with • **HALOPERIDOL**—avoid concomitant use; increased risk of ventricular arrhythmias when pimozide given with • **PHENOTHIAZINES**—avoid concomitant use; lurasidone possibly increases plasma concentration of **PIMOZIDE** (increased risk of toxicity); possible increased risk of ventricular arrhythmias when antipsychotics that prolong the QT interval given with • **RISPERIDONE**; increased risk of ventricular arrhythmias when pimozide given with • **SULPIRIDE**
- Antivirals: plasma concentration of aripiprazole possibly increased by • **ATAZANAVIR**, • **DARUNAVIR**, • **FOSAMPRENAVIR**, • **INDINAVIR**, • **LOPINAVIR**, • **RITONAVIR**, • **SAQUINAVIR** and • **TIPRANAVIR** (reduce dose of aripiprazole—consult aripiprazole product literature); plasma concentration of quetiapine possibly increased by • **ATAZANAVIR**, • **BOCEPREVIR**, • **DARUNAVIR**, • **FOSAMPRENAVIR**, • **INDINAVIR**, • **LOPINAVIR**, • **RITONAVIR**, • **SAQUINAVIR**, • **TELAPREVIR** and • **TIPRANAVIR**—manufacturer of quetiapine advises avoid concomitant use; plasma concentration of pimozide possibly increased by • **ATAZANAVIR**—avoid concomitant use; avoidance of pimozide advised by manufacturer of • **BOCEPREVIR** and • **TELAPREVIR**; plasma concentration of lurasidone possibly increased by • **BOCEPREVIR**, • **INDINAVIR**, • **RITONAVIR**, • **SAQUINAVIR** and • **TELAPREVIR**—avoid concomitant use; plasma concentration of aripiprazole possibly reduced by • **EFAVIRENZ** and • **NEVIRAPINE** (avoid concomitant use or consider increasing the dose of aripiprazole—consult aripiprazole product literature); plasma concentration of pimozide possibly increased by • **EFAVIRENZ**, • **INDINAVIR** and • **SAQUINAVIR** (increased risk of ventricular arrhythmias—avoid concomitant use); plasma concentration of pimozide increased by • **FOSAMPRENAVIR** and • **RITONAVIR** (increased risk of ventricular arrhythmias—avoid concomitant use); plasma concentration of antipsychotics possibly increased by • **RITONAVIR**; plasma concentration of olanzapine reduced by **RITONAVIR**—consider increasing dose of olanzapine; avoidance of clozapine advised by manufacturer of • **RITONAVIR** (increased risk of toxicity); increased risk of ventricular arrhythmias when clozapine, haloperidol or phenothiazines given with • **SAQUINAVIR**—avoid concomitant use
- Anxiolytics and Hypnotics: increased sedative effect when antipsychotics given with **ANXIOLYTICS** and **HYPNOTICS**; plasma concentration of haloperidol possibly increased by **ALPRAZOLAM**; lurasidone increases plasma concentration of **MIDAZOLAM**; serious adverse events reported with concomitant use of clozapine and

**Antipsychotics**

- Anxiolytics and Hypnotics (continued)
  - **BENZODIAZEPINES** (causality not established); increased risk of hypotension, bradycardia and respiratory depression when *intramuscular* olanzapine given with *parenteral*
  - **BENZODIAZEPINES**; plasma concentration of haloperidol increased by **BUSPIRONE**
- Aprepitant: avoidance of pimozone advised by manufacturer of
  - **APREPITANT**
- Atomoxetine: increased risk of ventricular arrhythmias when antipsychotics that prolong the QT interval given with
  - **ATOMOXETINE**
- Beta-blockers: enhanced hypotensive effect when phenothiazines given with **BETA-BLOCKERS**; plasma concentration of both drugs may increase when chlorpromazine given with
  - **PROPRANOLOL**; increased risk of ventricular arrhythmias when droperidol or zuclopenthixol given with
    - **SOTALOL**—avoid concomitant use; increased risk of ventricular arrhythmias when amisulpride, phenothiazines, pimozone or sulpiride given with
      - **SOTALOL**; possible increased risk of ventricular arrhythmias when risperidone given with
        - **SOTALOL**; possible increased risk of ventricular arrhythmias when haloperidol given with
          - **SOTALOL**—avoid concomitant use
  - Calcium-channel Blockers: enhanced hypotensive effect when antipsychotics given with **CALCIUM-CHANNEL BLOCKERS**; plasma concentration of lurasidone increased by
    - **DILTIAZEM** (see under Lurasidone, p. 315); plasma concentration of lurasidone possibly increased by
      - **VERAPAMIL** (see under Lurasidone, p. 315)
  - ▶ Clonidine: enhanced hypotensive effect when phenothiazines given with **CLONIDINE**
  - Cobicistat: plasma concentration of lurasidone possibly increased by
    - **COBICISTAT**—avoid concomitant use; plasma concentration of pimozone possibly increased by
      - **COBICISTAT**—manufacturer of cobicistat advises avoid concomitant use
  - Cytotoxics: avoid concomitant use of clozapine with
    - **CYTOTOXICS** (increased risk of agranulocytosis); possible increased risk of ventricular arrhythmias when haloperidol given with
      - **BOSUTINIB**; caution with pimozone advised by manufacturer of
        - **CRIZOTINIB**; avoidance of pimozone and quetiapine advised by manufacturer of **IDELALISIB**; avoidance of pimozone advised by manufacturer of
          - **LAPATINIB**; possible increased risk of ventricular arrhythmias when amisulpride, chlorpromazine, haloperidol, pimozone, sulpiride or zuclopenthixol given with
            - **VANDOTANIB**—avoid concomitant use; increased risk of ventricular arrhythmias when antipsychotics that prolong the QT interval given with
              - **ARSENIC TRIOXIDE**; increased risk of ventricular arrhythmias when haloperidol given with
                - **ARSENIC TRIOXIDE**
      - ▶ Deferasirox: avoidance of clozapine advised by manufacturer of **DEFERASIROX**
      - Desferrioxamine: manufacturer of levomepromazine advises avoid concomitant use with **DEFERRIOXAMINE**; avoidance of prochlorperazine advised by manufacturer of **DEFERRIOXAMINE**
      - ▶ Diazoxide: enhanced hypotensive effect when phenothiazines given with **DIAZOXIDE**
      - Diuretics: risk of ventricular arrhythmias with amisulpride increased by hypokalaemia caused by
        - **DIURETICS**; risk of ventricular arrhythmias with pimozone increased by hypokalaemia caused by
          - **DIURETICS** (avoid concomitant use); enhanced hypotensive effect when phenothiazines given with **DIURETICS**
      - ▶ Dopaminergics: increased risk of extrapyramidal side-effects when antipsychotics given with **AMANTADINE**; antipsychotics antagonise effects of **APOMORPHINE**, **CO-BENELDOPA**, **CO-CARELDOPA**, **LEVODOPA** and **PERGOLIDE**; antipsychotics antagonise hypoprolactinaemic and antiparkinsonian effects of **BROMOCRIPTINE** and **CABERGOLINE**; manufacturer of amisulpride advises avoid concomitant use of **CO-BENELDOPA**, **CO-CARELDOPA** and **LEVODOPA** (antagonism of effect); avoidance of antipsychotics advised by manufacturer of **PRAMIPEXOLE**, **ROPINIROLE** and **ROTIGOTINE** (antagonism of effect)

**Antipsychotics** (continued)

- ▶ Ergot Alkaloids: lurasidone possibly increases plasma concentration of **ERGOT ALKALOIDS** (increased risk of toxicity)
- Fosaprepitant: avoidance of pimozone advised by manufacturer of
  - **FOSAPREPITANT**
- Grapefruit Juice: manufacturer of lurasidone and pimozone advises avoid concomitant use with **GRAPEFRUIT JUICE**; plasma concentration of quetiapine possibly increased by
  - **GRAPEFRUIT JUICE**—manufacturer of quetiapine advises avoid concomitant use
- ▶ Histamine: antipsychotics theoretically antagonise effects of **HISTAMINE**—manufacturer of histamine advises avoid concomitant use
- Hormone Antagonists: manufacturer of droperidol advises avoid concomitant use with
  - **TAMOXIFEN** (risk of ventricular arrhythmias)
- Ivabradine: increased risk of ventricular arrhythmias when pimozone given with
  - **IVABRADINE**
- Lithium: increased risk of extrapyramidal side-effects and possibly neurotoxicity when clozapine, flupentixol, haloperidol, phenothiazines, risperidone or zuclopenthixol given with
  - **LITHIUM**; possible risk of toxicity when olanzapine given with **LITHIUM**; extrapyramidal side-effects of quetiapine possibly increased by **LITHIUM**; increased risk of extrapyramidal side-effects when sulpiride given with **LITHIUM**
- ▶ Memantine: effects of antipsychotics possibly reduced by **MEMANTINE**
- ▶ Methyldopa: enhanced hypotensive effect when antipsychotics given with **METHYLDOPA** (also increased risk of extrapyramidal effects)
- ▶ Metoclopramide: increased risk of extrapyramidal side-effects when antipsychotics given with **METOCLOPRAMIDE**
- ▶ Moxonidine: enhanced hypotensive effect when phenothiazines given with **MOXONIDINE**
- ▶ Muscle Relaxants: promazine possibly enhances effects of **SUXAMETHONIUM**
- ▶ Nitrates: enhanced hypotensive effect when phenothiazines given with **NITRATES**
- Penicillamine: avoid concomitant use of clozapine with
  - **PENICILLAMINE** (increased risk of agranulocytosis)
- Pentamidine Isetonate: increased risk of ventricular arrhythmias when amisulpride or droperidol given with
  - **PENTAMIDINE ISETONATE**—avoid concomitant use; increased risk of ventricular arrhythmias when phenothiazines given with
    - **PENTAMIDINE ISETONATE**
- ▶ Sodium Benzoate: haloperidol possibly reduces effects of **SODIUM BENZOATE**
- ▶ Sodium Oxybate: antipsychotics possibly enhance effects of **SODIUM OXYBATE**
- ▶ Sodium Phenylbutyrate: haloperidol possibly reduces effects of **SODIUM PHENYLBUTYRATE**
- ▶ Sympathomimetics: antipsychotics antagonise hypertensive effect of **SYMPATHOMIMETICS**; antipsychotic effects of chlorpromazine possibly antagonised by **DEXAMFETAMINE**; chlorpromazine possibly reduces effects of **LISDEXAMFETAMINE**; side-effects of risperidone possibly increased by **METHYLPHENIDATE**
- Tacrolimus: manufacturer of droperidol advises avoid concomitant use with
  - **TACROLIMUS** (risk of ventricular arrhythmias)
- ▶ Tetrabenazine: increased risk of extrapyramidal side-effects when antipsychotics given with **TETRABENAZINE**
- ▶ Ulcer-healing Drugs: effects of antipsychotics, chlorpromazine and clozapine possibly enhanced by **CIMETIDINE**; plasma concentration of clozapine possibly reduced by **OMEPRAZOLE**; absorption of sulpiride reduced by **SUCRALFATE**
- ▶ Vasodilator Antihypertensives: enhanced hypotensive effect when phenothiazines given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**

**Antivirals** see individual drugs**Anxiolytics and Hypnotics**

- ▶ ACE Inhibitors: enhanced hypotensive effect when anxiolytics and hypnotics given with **ACE INHIBITORS**

**Anxiolytics and Hypnotics** (continued)

- **Adrenergic Neurone Blockers:** enhanced hypotensive effect when anxiolytics and hypnotics given with **ADRENERGIC NEURONE BLOCKERS**
- **Alcohol:** increased sedative effect when anxiolytics and hypnotics given with **ALCOHOL**
- **Alpha-blockers:** enhanced hypotensive and sedative effects when anxiolytics and hypnotics given with **ALPHA-BLOCKERS**
- **Aminophylline:** effects of benzodiazepines possibly reduced by **AMINOPHYLLINE**
- **Anaesthetics, General:** increased sedative effect when anxiolytics and hypnotics given with **GENERAL ANAESTHETICS**
- **Analgesics:** metabolism of midazolam possibly inhibited by **FENTANYL**; increased sedative effect when anxiolytics and hypnotics given with **OPIOID ANALGESICS**
- **Angiotensin-II Receptor Antagonists:** enhanced hypotensive effect when anxiolytics and hypnotics given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- **Antibacterials:** metabolism of midazolam inhibited by ● **CLARITHROMYCIN**, ● **ERYTHROMYCIN** and ● **TELITHROMYCIN** (increased plasma concentration with increased sedation); plasma concentration of buspirone increased by ● **ERYTHROMYCIN** (reduce dose of buspirone); metabolism of zopiclone inhibited by **ERYTHROMYCIN**; manufacturer of zolpidem advises avoid concomitant use with **CIPROFLOXACIN**; metabolism of benzodiazepines possibly accelerated by **RIFAMPICIN** (reduced plasma concentration); metabolism of diazepam and zaleplon accelerated by **RIFAMPICIN** (reduced plasma concentration); metabolism of buspirone possibly accelerated by **RIFAMPICIN**; metabolism of zolpidem accelerated by **RIFAMPICIN** (reduced plasma concentration and reduced effect); plasma concentration of zopiclone significantly reduced by **RIFAMPICIN**; metabolism of diazepam inhibited by **ISONIAZID**
- **Anticoagulants:** chloral may transiently enhance anticoagulant effect of **COUMARINS**
- **Antidepressants:** plasma concentration of alprazolam increased by **FLUOXETINE**; plasma concentration of melatonin increased by ● **FLUVOXAMINE**—avoid concomitant use; plasma concentration of some benzodiazepines increased by **FLUVOXAMINE**; sedative effects possibly increased when zolpidem given with **SERTRALINE**; manufacturer of buspirone advises avoid concomitant use with **MAOIS**; avoidance of buspirone for 14 days after stopping ● **TRANLYCYPROMINE** advised by manufacturer of tranlycypromine; plasma concentration of *oral* midazolam possibly reduced by **ST JOHN'S WORT**; increased sedative effect when anxiolytics and hypnotics given with **MIRTAZAPINE**, **TRICYCLIC-RELATED ANTIDEPRESSANTS** or **TRICYCLICS**
- **Antiepileptics:** plasma concentration of midazolam reduced by **CARBAMAZEPINE** and **PERAMPANEL**; plasma concentration of clonazepam often reduced by **CARBAMAZEPINE**, **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**; benzodiazepines possibly increase or decrease plasma concentration of **FOSPHENYTOIN** and **PHENYTOIN**; diazepam increases or decreases plasma concentration of **FOSPHENYTOIN** and **PHENYTOIN**; increased sedative effect when anxiolytics and hypnotics given with **PHENOBARBITAL** or **PRIMIDONE**; clobazam possibly increases plasma concentration of **SODIUM VALPROATE** and **VALPROIC ACID**; plasma concentration of diazepam and lorazepam possibly increased by **SODIUM VALPROATE**; increased risk of side-effects when clonazepam given with **SODIUM VALPROATE** or **VALPROIC ACID**; plasma concentration of clobazam increased by **STIRIPENTOL**; plasma concentration of diazepam and lorazepam possibly increased by **VALPROIC ACID**
- **Antifungals:** plasma concentration of alprazolam increased by ● **KETOCONAZOLE**—manufacturer of ketoconazole advises avoid concomitant use; plasma concentration of midazolam increased by ● **KETOCONAZOLE** (risk of prolonged sedation)—avoid concomitant use of *oral* midazolam; plasma concentration of zolpidem increased by **KETOCONAZOLE**; plasma concentration of diazepam and midazolam increased by ● **FLUCONAZOLE** (risk of prolonged sedation); plasma concentration of alprazolam increased by **ITRACONAZOLE**; plasma concentration of midazolam increased by ● **ITRACONAZOLE**, ● **POSACONAZOLE** and ● **VORICONAZOLE** (risk of

**Anxiolytics and Hypnotics**

- **Antifungals** (continued) prolonged sedation); plasma concentration of buspirone increased by **ITRACONAZOLE** (reduce dose of buspirone); plasma concentration of diazepam increased by ● **VORICONAZOLE** (risk of prolonged sedation)
- **Antihistamines:** increased sedative effect when anxiolytics and hypnotics given with **ANTIHISTAMINES**
- **Antipsychotics:** increased sedative effect when anxiolytics and hypnotics given with **ANTIPSYCHOTICS**; alprazolam possibly increases plasma concentration of **HALOPERIDOL**; buspirone increases plasma concentration of **HALOPERIDOL**; serious adverse events reported with concomitant use of benzodiazepines and ● **CLOZAPINE** (causality not established); plasma concentration of midazolam increased by **LURASIDONE**; increased risk of hypotension, bradycardia and respiratory depression when *parenteral* benzodiazepines given with *intramuscular* ● **OLANZAPINE**
- **Antivirals:** plasma concentration of midazolam possibly increased by ● **ATAZANAVIR**—avoid concomitant use of *oral* midazolam; plasma concentration of *oral* midazolam increased by ● **BOCEPREVIR**—manufacturer of boceprevir advises avoid concomitant use; increased risk of prolonged sedation when midazolam given with ● **EFAVIRENZ**—avoid concomitant use; plasma concentration of midazolam possibly increased by ● **FOSAMPRENAVIR**, ● **INDINAVIR**, ● **RITONAVIR** and ● **TELAPREVIR** (risk of prolonged sedation—avoid concomitant use of *oral* midazolam); increased risk of prolonged sedation when alprazolam given with ● **INDINAVIR**—avoid concomitant use; plasma concentration of anxiolytics and hypnotics possibly increased by ● **RITONAVIR**; plasma concentration of alprazolam, diazepam, flurazepam and zolpidem possibly increased by ● **RITONAVIR** (risk of extreme sedation and respiratory depression—avoid concomitant use); plasma concentration of buspirone increased by **RITONAVIR** (increased risk of toxicity); plasma concentration of midazolam increased by ● **SAQUINAVIR** (risk of prolonged sedation—avoid concomitant use of *oral* midazolam); plasma concentration of *oral* midazolam increased by **SIMEPREVIR**
- **Aprepitant:** plasma concentration of midazolam increased by **APREPITANT** (risk of prolonged sedation)
- **Beta-blockers:** enhanced hypotensive effect when anxiolytics and hypnotics given with **BETA-BLOCKERS**
- **Calcium-channel Blockers:** enhanced hypotensive effect when anxiolytics and hypnotics given with **CALCIUM-CHANNEL BLOCKERS**; midazolam increases absorption of **LERCANIDIPINE**; metabolism of midazolam inhibited by **DILTIAZEM** and **VERAPAMIL** (increased plasma concentration with increased sedation); plasma concentration of buspirone increased by **DILTIAZEM** and **VERAPAMIL** (reduce dose of buspirone)
- **Cardiac Glycosides:** alprazolam increases plasma concentration of **DIGOXIN** (increased risk of toxicity)
- **Clonidine:** enhanced hypotensive effect when anxiolytics and hypnotics given with **CLONIDINE**
- **Cobicistat:** avoidance of *oral* midazolam advised by manufacturer of ● **COBICISTAT**
- **Cytotoxics:** plasma concentration of midazolam increased by ● **CRIZOTINIB** and **NILOTINIB**; avoidance of *oral* midazolam advised by manufacturer of **IDELALISIB**
- **Deferasirox:** plasma concentration of midazolam possibly reduced by **DEFERASIROX**
- **Diazoxide:** enhanced hypotensive effect when anxiolytics and hypnotics given with **DIAZOXIDE**
- **Disulfiram:** metabolism of benzodiazepines inhibited by **DISULFIRAM** (increased sedative effects); increased risk of temazepam toxicity when given with **DISULFIRAM**
- **Diuretics:** enhanced hypotensive effect when anxiolytics and hypnotics given with **DIURETICS**; administration of chloral with *parenteral* **FUROSEMIDE** may displace thyroid hormone from binding sites
- **Dopaminergics:** benzodiazepines possibly antagonise effects of **CO-BENELDOPA**, **CO-CARELDOPA** and **LEVODOPA**
- **Fosaprepitant:** plasma concentration of midazolam increased by **FOSAPREPITANT** (risk of prolonged sedation)

**Anxiolytics and Hypnotics** (continued)

- ▶ Grapefruit Juice: plasma concentration of *oral* midazolam possibly increased by **GRAPEFRUIT JUICE**; plasma concentration of buspirone increased by **GRAPEFRUIT JUICE**
- ▶ Ivacaftor: plasma concentration of midazolam increased by **IVACAFTOR**
- ▶ Lipid-regulating Drugs: plasma concentration of midazolam possibly increased by **ATORVASTATIN**; separating administration from alprazolam by 12 hours advised by manufacturer of **LOMITAPIDE**
- ▶ Lithium: increased risk of neurotoxicity when clonazepam given with **LITHIUM**
- ▶ Lofexidine: increased sedative effect when anxiolytics and hypnotics given with **LOFEXIDINE**
- ▶ Methyldopa: enhanced hypotensive effect when anxiolytics and hypnotics given with **METHYLDOPA**
- Methylthioninium: possible risk of CNS toxicity when buspirone given with ● **METHYLTHIONIUM**—avoid concomitant use (if avoidance not possible, use lowest possible dose of methylthioninium and observe patient for up to 4 hours after administration)
- ▶ Moxonidine: enhanced hypotensive effect when anxiolytics and hypnotics given with **MOXONIDINE**; sedative effects possibly increased when benzodiazepines given with **MOXONIDINE**
- ▶ Muscle Relaxants: increased sedative effect when anxiolytics and hypnotics given with **BACLOFEN** or **TIZANIDINE**
- ▶ Nitrates: enhanced hypotensive effect when anxiolytics and hypnotics given with **NITRATES**
- ▶ Oestrogens: plasma concentration of melatonin increased by **OESTROGENS**; plasma concentration of chlordiazepoxide, diazepam and nitrazepam possibly increased by **OESTROGENS**; plasma concentration of lorazepam, oxazepam and temazepam possibly reduced by **OESTROGENS**
- ▶ Progestogens: plasma concentration of chlordiazepoxide, diazepam and nitrazepam possibly increased by **PROGESTOGENS**; plasma concentration of lorazepam, oxazepam and temazepam possibly reduced by **PROGESTOGENS**
- Sodium Oxybate: benzodiazepines enhance effects of ● **SODIUM OXYBATE** (avoid concomitant use)
- ▶ Theophylline: effects of benzodiazepines possibly reduced by **THEOPHYLLINE**
- ▶ Ulcer-healing Drugs: plasma concentration of melatonin increased by **CIMETIDINE**; metabolism of benzodiazepines, clomethiazole and zaleplon inhibited by **CIMETIDINE** (increased plasma concentration); metabolism of diazepam possibly inhibited by **ESOMEPRAZOLE** and **OMEPRAZOLE** (increased plasma concentration)
- ▶ Vasodilator Antihypertensives: enhanced hypotensive effect when anxiolytics and hypnotics given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**

**Apixaban**

- Analgesics: increased risk of haemorrhage when anticoagulants given with *intravenous* ● **DICLOFENAC** (avoid concomitant use, including low-dose heparins); increased risk of haemorrhage when anticoagulants given with ● **KETOROLAC** (avoid concomitant use, including low-dose heparins)
- Antibacterials: manufacturer of apixaban advises avoid concomitant use with **CLARITHROMYCIN** and **TELITHROMYCIN**; plasma concentration of apixaban possibly reduced by ● **RIFAMPICIN**—manufacturer of apixaban advises avoid concomitant use when given for treatment of deep-vein thrombosis or pulmonary embolism
- Anticoagulants: increased risk of haemorrhage when apixaban given with other ● **ANTICOAGULANTS** (avoid concomitant use except when switching with other anticoagulants or using heparin to maintain catheter patency); increased risk of haemorrhage when other anticoagulants given with ● **DABIGATRAN** and ● **RIVAROXABAN** (avoid concomitant use except when switching with other anticoagulants or using heparin to maintain catheter patency)
- Antidepressants: plasma concentration of apixaban possibly reduced by ● **ST JOHN'S WORT**—manufacturer of apixaban advises avoid concomitant use when given for treatment of deep-vein thrombosis or pulmonary embolism

**Apixaban** (continued)

- Antiepileptics: plasma concentration of apixaban possibly reduced by ● **CARBAMAZEPINE**—manufacturer of apixaban advises avoid concomitant use when given for treatment of deep-vein thrombosis or pulmonary embolism; plasma concentration of apixaban possibly reduced by ● **FOSPHENYTOIN**, ● **PHENOBARBITAL**, ● **PHENYTOIN** and ● **PRIMIDONE**
- Antifungals: plasma concentration of apixaban increased by ● **KETOCONAZOLE**—manufacturer of apixaban advises avoid concomitant use; manufacturer of apixaban advises avoid concomitant use with **ITRACONAZOLE**, **POSACONAZOLE** and **VORICONAZOLE**
- ▶ Antivirals: manufacturer of apixaban advises avoid concomitant use with **ATAZANAVIR**, **BOCEPREVIR**, **DARUNAVIR**, **FOSAMPRENAVIR**, **INDINAVIR**, **LOPINAVIR**, **RITONAVIR**, **SAQUINAVIR**, **TELAPREVIR** and **TIPRANAVIR**
- ▶ Cobistat: manufacturer of apixaban advises avoid concomitant use with **COBICISTAT**
- ▶ Sulfinpyrazone: increased risk of bleeding when apixaban given with **SULFINPYRAZONE**

**Apomorphine**

- ▶ Antipsychotics: effects of apomorphine antagonised by **ANTIPSYCHOTICS**
- ▶ Dopaminergics: effects of apomorphine possibly enhanced by **ENTACAPONE**
- 5HT<sub>3</sub>-receptor Antagonists: possible increased hypotensive effect when apomorphine given with ● **ONDANSETRON**—avoid concomitant use
- ▶ Memantine: effects of dopaminergics possibly enhanced by **MEMANTINE**
- ▶ Methyldopa: antiparkinsonian effect of dopaminergics antagonised by **METHYLDOPA**

**Apraclonidine**

- ▶ Antidepressants: manufacturer of apraclonidine advises avoid concomitant use with **MAOIs**, **TRICYCLIC-RELATED ANTIDEPRESSANTS** and **TRICYCLICS**
- ▶ Sympathomimetics: manufacturer of apraclonidine advises avoid concomitant use with **SYMPATHOMIMETICS**

**Aprepitant**

- Antibacterials: plasma concentration of aprepitant possibly increased by **CLARITHROMYCIN** and **TELITHROMYCIN**; plasma concentration of aprepitant reduced by **RIFAMPICIN**
- ▶ Anticoagulants: aprepitant possibly reduces anticoagulant effect of **WARFARIN**
- Antidepressants: manufacturer of aprepitant advises avoid concomitant use with ● **ST JOHN'S WORT**
- ▶ Antidiabetics: aprepitant reduces plasma concentration of **TOLUTAMIDE**
- ▶ Antiepileptics: plasma concentration of aprepitant possibly reduced by **CARBAMAZEPINE**, **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**
- ▶ Antifungals: plasma concentration of aprepitant increased by **KETOCONAZOLE**
- Antipsychotics: manufacturer of aprepitant advises avoid concomitant use with ● **PIMOZIDE**
- ▶ Antivirals: plasma concentration of aprepitant possibly increased by **RITONAVIR**
- ▶ Anxiolytics and Hypnotics: aprepitant increases plasma concentration of **MIDAZOLAM** (risk of prolonged sedation)
- Avanafil: aprepitant possibly increases plasma concentration of ● **AVANAFIL**—see under Avanafil, p. 698
- ▶ Calcium-channel Blockers: plasma concentration of both drugs may increase when aprepitant given with **DILTIAZEM**
- ▶ Corticosteroids: aprepitant inhibits metabolism of **DEXAMETHASONE** and **METHYLPREDNISOLONE** (reduce dose of dexamethasone and methylprednisolone)
- Cytotoxics: aprepitant possibly increases the plasma concentration of ● **BOSUTINIB**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib; aprepitant possibly increases the plasma concentration of ● **IBRUTINIB**—reduce dose of ibrutinib (see under Ibrutinib, p. 809)
- ▶ Dapoxetine: manufacturer of dapoxetine advises dose reduction when aprepitant given with **DAPOXETINE** (see under Dapoxetine, p. 703)



**Aprepitant** (continued)

- Oestrogens: aprepitant possibly causes contraceptive failure of hormonal contraceptives containing • **OESTROGENS** (alternative contraception recommended)
- Progestogens: aprepitant possibly causes contraceptive failure of hormonal contraceptives containing • **PROGESTOGENS** (alternative contraception recommended)

**Argatroban**

- Analgesics: increased risk of haemorrhage when anticoagulants given with **intravenous** • **DICLOFENAC** (avoid concomitant use, including low-dose heparins); increased risk of haemorrhage when anticoagulants given with • **KETOROLAC** (avoid concomitant use, including low-dose heparins)
- Anticoagulants: increased risk of haemorrhage when other anticoagulants given with • **APIXABAN**, • **DABIGATRAN** and • **RIVAROXABAN** (avoid concomitant use except when switching with other anticoagulants or using heparin to maintain catheter patency)

**Aripiprazole** see Antipsychotics**Arsenic Trioxide**

- Anti-arrhythmics: increased risk of ventricular arrhythmias when arsenic trioxide given with • **AMIODARONE** or • **DISOPYRAMIDE**
- Antibacterials: increased risk of ventricular arrhythmias when arsenic trioxide given with • **DELAMANID**, • **ERYTHROMYCIN**, • **LEVOFLOXACIN** or • **MOXIFLOXACIN**
- Antidepressants: increased risk of ventricular arrhythmias when arsenic trioxide given with • **AMITRIPTYLINE** or • **CLOMIPRAMINE**
- Antifungals: increased risk of ventricular arrhythmias when arsenic trioxide given with • **AMPHOTERICIN**
- Antimalarials: avoidance of arsenic trioxide advised by manufacturer of • **ARTENIMOL WITH PIPERAQUINE** (possible risk of ventricular arrhythmias)
- Antipsychotics: increased risk of ventricular arrhythmias when arsenic trioxide given with • **ANTIPSYCHOTICS** that prolong the QT interval; increased risk of ventricular arrhythmias when arsenic trioxide given with • **HALOPERIDOL**; avoid concomitant use of cytotoxics with • **CLOZAPINE** (increased risk of agranulocytosis)
- Beta-blockers: increased risk of ventricular arrhythmias when arsenic trioxide given with • **SOTALOL**
- Cytotoxics: possible increased risk of ventricular arrhythmias when arsenic trioxide given with • **VANDETANIB**—avoid concomitant use
- Diuretics: risk of ventricular arrhythmias with arsenic trioxide increased by hypokalaemia caused by • **ACETAZOLAMIDE**, • **LOOP DIURETICS** or • **THIAZIDES AND RELATED DIURETICS**
- Lithium: increased risk of ventricular arrhythmias when arsenic trioxide given with • **LITHIUM**

**Artemether with Lumefantrine**

- Anti-arrhythmics: manufacturer of artemether with lumefantrine advises avoid concomitant use with • **AMIODARONE**, • **DISOPYRAMIDE** and • **FLECAINIDE** (risk of ventricular arrhythmias)
- Antibacterials: manufacturer of artemether with lumefantrine advises avoid concomitant use with • **MACROLIDES** and • **QUINOLONES**
- Antidepressants: possible increased risk of ventricular arrhythmias when artemether with lumefantrine given with • **CITALOPRAM** or • **ESCITALOPRAM**—avoid concomitant use; manufacturer of artemether with lumefantrine advises avoid concomitant use with • **ANTIDEPRESSANTS**
- Antifungals: manufacturer of artemether with lumefantrine advises avoid concomitant use with • **IMIDAZOLES** and • **TRIAZOLES**
- Antimalarials: manufacturer of artemether with lumefantrine advises avoid concomitant use with • **ANTIMALARIALS**; increased risk of ventricular arrhythmias when artemether with lumefantrine given with • **QUININE**
- Antipsychotics: manufacturer of artemether with lumefantrine advises avoid concomitant use with • **ANTIPSYCHOTICS**
- Antivirals: manufacturer of artemether with lumefantrine advises caution with **ATAZANAVIR**, **FOSAMPRENAVIR**, **INDINAVIR**,

**Artemether with Lumefantrine**

- Antivirals (continued)  
**LOPINAVIR**, **RITONAVIR**, **SAQUINAVIR** and **TIPRANAVIR**; avoidance of artemether with lumefantrine advised by manufacturer of • **BOCEPREVIR**; plasma concentration of lumefantrine increased when artemether with lumefantrine given with **DARUNAVIR**; plasma concentration of artemether with lumefantrine reduced by • **EFAVIRENZ** and **ETRAVIRINE**
- Beta-blockers: manufacturer of artemether with lumefantrine advises avoid concomitant use with • **METOPROLOL** and • **SOTALOL**
- Cytotoxics: possible increased risk of ventricular arrhythmias when artemether with lumefantrine given with • **VANDETANIB**—avoid concomitant use
  - Grapefruit Juice: plasma concentration of artemether with lumefantrine possibly increased by **GRAPEFRUIT JUICE**
  - Histamine: avoidance of antimalarials advised by manufacturer of **HISTAMINE**
- Ulcer-healing Drugs: manufacturer of artemether with lumefantrine advises avoid concomitant use with • **CIMETIDINE**
- Vaccines: antimalarials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Artenimol with Piperaquine**

**NOTE** Piperaquine has a long half-life; there is a potential for drug interactions to occur for up to 3 months after treatment has been stopped

- Analgesics: manufacturer of artenimol with piperaquine advises avoid concomitant use with • **METHADONE** (possible risk of ventricular arrhythmias)
- Anti-arrhythmics: manufacturer of artenimol with piperaquine advises avoid concomitant use with • **AMIODARONE** and • **DISOPYRAMIDE** (possible risk of ventricular arrhythmias)
- Antibacterials: manufacturer of artenimol with piperaquine advises avoid concomitant use with • **MACROLIDES** and • **MOXIFLOXACIN** (possible risk of ventricular arrhythmias); manufacturer of artenimol with piperaquine advises avoid concomitant use with **RIFAMPICIN**
- Antidepressants: possible increased risk of ventricular arrhythmias when artenimol with piperaquine given with • **CITALOPRAM** or • **ESCITALOPRAM**—avoid concomitant use; manufacturer of artenimol with piperaquine advises avoid concomitant use with • **ANTIDEPRESSANTS**
- Antiepileptics: manufacturer of artenimol with piperaquine advises avoid concomitant use with **CARBAMAZEPINE**, **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**
- Antifungals: manufacturer of artenimol with piperaquine advises avoid concomitant use with • **IMIDAZOLES** and • **TRIAZOLES** (possible risk of ventricular arrhythmias)
- Antihistamines: manufacturer of artenimol with piperaquine advises avoid concomitant use with • **MIZOLASTINE** (possible risk of ventricular arrhythmias)
- Antimalarials: avoidance of antimalarials advised by manufacturer of • **ARTEMETHER WITH LUMEFANTRINE**
- Antipsychotics: manufacturer of artenimol with piperaquine advises avoid concomitant use with • **DROPERIDOL**, • **HALOPERIDOL**, • **PHENOTHIAZINES** and • **PIMOZIDE** (possible risk of ventricular arrhythmias)
- Antivirals: manufacturer of artenimol with piperaquine advises avoid concomitant use with • **SAQUINAVIR** (possible risk of ventricular arrhythmias)
- Beta-blockers: manufacturer of artenimol with piperaquine advises avoid concomitant use with • **SOTALOL** (possible risk of ventricular arrhythmias)
- Cytotoxics: manufacturer of artenimol with piperaquine advises avoid concomitant use with • **ARSENIC TRIOXIDE** (possible risk of ventricular arrhythmias); manufacturer of artenimol with piperaquine advises avoid concomitant use with • **VINBLASTINE**, • **VINCISTINE**, • **VINFLUNINE** and • **VINORELBINE**
- Domperidone: manufacturer of artenimol with piperaquine advises avoid concomitant use with • **DOMPERIDONE** (possible risk of ventricular arrhythmias)
- Grapefruit Juice: manufacturer of artenimol with piperaquine advises avoid concomitant use with **GRAPEFRUIT JUICE**

**Artenimol with Piperaquine** (continued)

- Histamine: avoidance of antimalarials advised by manufacturer of **HISTAMINE**
- Pentamidine Isetionate: manufacturer of artenimol with piperaquine advises avoid concomitant use with
  - **PENTAMIDINE ISETIONATE** (possible risk of ventricular arrhythmias)
- Vaccines: antimalarials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Ascorbic acid** see Vitamins**Asenapine** see Antipsychotics**Aspirin**

- Adsorbents: absorption of aspirin possibly reduced by **KAOLIN**
- Anaesthetics, General: aspirin possibly enhances effects of **THIOPENTAL**
- Analgesics: avoid concomitant use of aspirin with
  - **NSAIDS** (increased side-effects); antiplatelet effect of aspirin possibly reduced by **IBUPROFEN**
- Antacids: excretion of aspirin increased by alkaline urine due to some **ANTACIDS**
- Anticoagulants: increased risk of bleeding when aspirin given with
  - **COUMARINS** or **PHENINDIONE** (due to antiplatelet effect); aspirin enhances anticoagulant effect of **HEPARINS**
- Antidepressants: increased risk of bleeding when aspirin given with
  - **SSRIS** or **VENLAFAXINE**
- Antiepileptics: aspirin enhances effects of **FOSPHENYTOIN**, **PHENYTOIN**, **SODIUM VALPROATE** and **VALPROIC ACID**
- Clopidogrel: increased risk of bleeding when aspirin given with **CLOPIDOGREL**
- Corticosteroids: increased risk of gastro-intestinal bleeding and ulceration when aspirin given with **CORTICOSTEROIDS**, also corticosteroids reduce plasma concentration of salicylate
- Cytotoxics: aspirin reduces excretion of
  - **METHOTREXATE** (increased risk of toxicity); aspirin possibly reduces renal excretion of **PEMETREXED**—consult product literature
- Diuretics: increased risk of toxicity when high-dose aspirin given with
  - **ACETAZOLAMIDE**; aspirin antagonises diuretic effect of **SPIRONOLACTONE**; possible increased risk of toxicity when high-dose aspirin given with **LOOP DIURETICS** (also possible reduced effect of loop diuretics)
- Iloprost: increased risk of bleeding when aspirin given with **ILOPROST**
- Leukotriene Receptor Antagonists: aspirin increases plasma concentration of **ZAFIRLUKAST**
- Metoclopramide: rate of absorption of aspirin increased by **METOCLOPRAMIDE** (enhanced effect)
- Sulfinpyrazone: aspirin antagonises effects of **SULFINPYRAZONE**

**Atazanavir**

- Antacids: absorption of atazanavir reduced by **ANTACIDS** (give at least 2 hours before or 1 hour after antacids)
- Anti-arrhythmics: atazanavir possibly increases plasma concentration of
  - **AMIODARONE** and **LIDOCAINE**
- Antibacterials: plasma concentration of both drugs increased when atazanavir given with **CLARITHROMYCIN**; atazanavir increases plasma concentration of
  - **RIFABUTIN** (reduce dose of rifabutin); plasma concentration of atazanavir reduced by
    - **RIFAMPICIN**—avoid concomitant use; avoidance of concomitant atazanavir in severe renal and hepatic impairment advised by manufacturer of **TELITHROMYCIN**
- Anticoagulants: atazanavir may enhance or reduce anticoagulant effect of **WARFARIN**; avoidance of atazanavir advised by manufacturer of **APIXABAN** and **RIVAROXABAN**
- Antidepressants: plasma concentration of atazanavir reduced by
  - **ST JOHN'S WORT**—avoid concomitant use
- Antifungals: plasma concentration of atazanavir increased by
  - **POSACONAZOLE**; atazanavir increases or decreases the plasma concentration of
    - **VORICONAZOLE** and plasma concentration of atazanavir also reduced
- Antimalarials: caution with atazanavir advised by manufacturer of **ARTEMETHER WITH LUMEFANTRINE**; atazanavir possibly increases plasma concentration of
  - **QUININE** (increased risk of toxicity)
- Antimuscarinics: avoidance of atazanavir advised by manufacturer of **DARIFENACIN**; manufacturer of fesoterodine advises dose reduction when atazanavir given with **FESOTERODINE**—consult fesoterodine product literature

**Atazanavir** (continued)

- Antipsychotics: atazanavir possibly increases plasma concentration of
  - **ARIPRAZOLE** (reduce dose of aripiprazole—consult aripiprazole product literature); atazanavir possibly increases plasma concentration of
    - **PIMOZIDE**—avoid concomitant use; atazanavir possibly increases plasma concentration of
      - **QUETIAPINE**—manufacturer of quetiapine advises avoid concomitant use
  - Antivirals: plasma concentration of atazanavir reduced by
    - **BOCEPREVIR**; atazanavir increases the plasma concentration of
      - **DACLATASVIR**—reduce dose of daclatasvir (see under Daclatasvir, p. 544); absorption of atazanavir reduced by **DIDANOSINE tablets** (give at least 2 hours before or 1 hour after didanosine tablets); manufacturer of atazanavir advises avoid concomitant use with
        - **EFAVIRENZ** (plasma concentration of atazanavir reduced); atazanavir boosted with ritonavir increases plasma concentration of
          - **ELVITEGRAVIR** (reduce dose of elvitegravir); avoid concomitant use of atazanavir with
            - **INDINAVIR**; atazanavir increases plasma concentration of
              - **MARAVIROC** (consider reducing dose of maraviroc); plasma concentration of atazanavir possibly reduced by
                - **NEVIRAPINE**—avoid concomitant use; increased risk of ventricular arrhythmias when atazanavir given with
                  - **SAQUINAVIR**—avoid concomitant use; atazanavir possibly reduces plasma concentration of **TELAPREVIR**, also plasma concentration of atazanavir possibly increased; plasma concentration of atazanavir reduced by **TENOFOVIR**, also plasma concentration of tenofovir possibly increased; atazanavir increases plasma concentration of **TIPRANAVIR** (also plasma concentration of atazanavir reduced)
          - Anxiolytics and Hypnotics: atazanavir possibly increases plasma concentration of
            - **MIDAZOLAM**—avoid concomitant use of oral midazolam
          - Avanafil: atazanavir possibly increases plasma concentration of
            - **AVANAFIL**—manufacturer of avanafil advises avoid concomitant use
          - Calcium-channel Blockers: atazanavir increases plasma concentration of
            - **DILTIAZEM** (reduce dose of diltiazem); atazanavir possibly increases plasma concentration of **VERAPAMIL**
          - Ciclosporin: atazanavir possibly increases plasma concentration of
            - **CICLOSPORIN**
          - Colchicine: atazanavir possibly increases risk of
            - **COLCHICINE** toxicity—suspend or reduce dose of colchicine (avoid concomitant use in hepatic or renal impairment)
          - Cytotoxics: atazanavir possibly increases plasma concentration of
            - **AXITINIB** (reduce dose of axitinib—consult axitinib product literature); atazanavir possibly increases the plasma concentration of
              - **BOSUTINIB**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib; atazanavir possibly increases plasma concentration of
                - **CRIZOTINIB** and **EVEROLIMUS**—manufacturer of crizotinib and everolimus advises avoid concomitant use; atazanavir possibly increases the plasma concentration of
                  - **IBRUTINIB**—reduce dose of ibrutinib (see under Ibrutinib, p. 809); atazanavir possibly increases plasma concentration of
                    - **PAZOPANIB** (reduce dose of pazopanib); avoidance of atazanavir advised by manufacturer of
                      - **CABAZITAXEL**; atazanavir possibly inhibits metabolism of
                        - **IRINOTECAN** (increased risk of toxicity)
              - Dapoxetine: avoidance of atazanavir advised by manufacturer of
                - **DAPOXETINE** (increased risk of toxicity)
              - Ergot Alkaloids: atazanavir possibly increases plasma concentration of
                - **ERGOT ALKALOIDS**—avoid concomitant use
              - Lipid-regulating Drugs: possible increased risk of myopathy when atazanavir given with
                - **ATORVASTATIN** or **PRAVASTATIN**; atazanavir increases plasma concentration of
                  - **ROSUVASTATIN**—adjust dose of rosuvastatin (consult product literature); increased risk of myopathy when atazanavir given with
                    - **SIMVASTATIN** (avoid concomitant use)
                - Oestrogens: atazanavir increases plasma concentration of
                  - **ETHINYLESTRADIOL**
                - Orlistat: absorption of atazanavir possibly reduced by
                  - **ORLISTAT**
                - Progestogens: atazanavir increases plasma concentration of
                  - **NORETHISTERONE**

**Atazanavir** (continued)

- Ranolazine: atazanavir possibly increases plasma concentration of ● **RANOLAZINE**—manufacturer of ranolazine advises avoid concomitant use
- Sildenafil: atazanavir possibly increases side-effects of ● **SILDENAFIL**
- Sirolimus: atazanavir possibly increases plasma concentration of ● **SIROLIMUS**
- Tacrolimus: atazanavir possibly increases plasma concentration of ● **TACROLIMUS**
- Ticagrelor: atazanavir possibly increases plasma concentration of ● **TICAGRELOR**—manufacturer of ticagrelor advises avoid concomitant use
- Ulcer-healing Drugs: manufacturer of atazanavir advises adjust doses of both drugs when atazanavir given with **CIMETIDINE** and **NIZATIDINE**—consult atazanavir product literature; plasma concentration of atazanavir reduced by ● **FAMOTIDINE** and ● **RANITIDINE** (adjust doses of both drugs—consult atazanavir product literature); plasma concentration of atazanavir reduced by ● **PROTON PUMP INHIBITORS**—avoid or adjust dose of both drugs (consult product literature)

**Atenolol** see Beta-blockers**Atomoxetine**

- Analgesics: increased risk of ventricular arrhythmias when atomoxetine given with ● **METHADONE**; possible increased risk of convulsions when atomoxetine given with **TRAMADOL**
- Anti-arrhythmics: increased risk of ventricular arrhythmias when atomoxetine given with ● **AMIODARONE** or ● **DISOPYRAMIDE**
- Antibacterials: increased risk of ventricular arrhythmias when atomoxetine given with *parenteral* ● **ERYTHROMYCIN**; increased risk of ventricular arrhythmias when atomoxetine given with ● **MOXIFLOXACIN**
- Antidepressants: metabolism of atomoxetine possibly inhibited by **FLUOXETINE** and **PAROXETINE**; possible increased risk of convulsions when atomoxetine given with **ANTIDEPRESSANTS**; atomoxetine should not be started until 2 weeks after stopping ● **MAOIs**, also MAOIs should not be started until at least 2 weeks after stopping atomoxetine; increased risk of ventricular arrhythmias when atomoxetine given with ● **TRICYCLICS**
- Antimalarials: increased risk of ventricular arrhythmias when atomoxetine given with ● **MEFLOQUINE**
- Antipsychotics: increased risk of ventricular arrhythmias when atomoxetine given with ● **ANTIPSYCHOTICS** that prolong the QT interval
- Beta-blockers: increased risk of ventricular arrhythmias when atomoxetine given with ● **SOTALOL**
- Bupropion: possible increased risk of convulsions when atomoxetine given with **BUPROPION**
- Diuretics: risk of ventricular arrhythmias with atomoxetine increased by hypokalaemia caused by ● **DIURETICS**
- Sympathomimetics, Beta<sub>2</sub>: Increased risk of cardiovascular side-effects when atomoxetine given with *parenteral* **SALBUTAMOL**

**Atorvastatin** see Statins**Atovaquone**

- Antibacterials: manufacturer of atovaquone advises avoid concomitant use with **RIFABUTIN** (plasma concentration of both drugs reduced); plasma concentration of atovaquone reduced by ● **RIFAMPICIN** (and concentration of rifampicin increased)—avoid concomitant use; plasma concentration of atovaquone reduced by **TETRACYCLINE**
- Antivirals: plasma concentration of atovaquone reduced by ● **EFAVIRENZ**—avoid concomitant use; atovaquone possibly reduces plasma concentration of **INDINAVIR**; plasma concentration of atovaquone possibly reduced by **RITONAVIR**—manufacturer of atovaquone advises avoid concomitant use; atovaquone increases plasma concentration of **ZIDOVUDINE** (increased risk of toxicity)
- Cytotoxics: atovaquone possibly increases plasma concentration of **ETOPOSIDE**
- Histamine: avoidance of atovaquone advised by manufacturer of **HISTAMINE**
- Metoclopramide: plasma concentration of atovaquone reduced by **METOCLOPRAMIDE**—avoid concomitant use

**Atracurium** see Muscle Relaxants**Atropine** see Antimuscarinics**Avanafil**

- ACE Inhibitors: avanafil possibly enhances hypotensive effect of **ENALAPRIL**
- Alcohol: possible enhanced hypotensive effect when avanafil given with **ALCOHOL**
- Alpha-blockers: enhanced hypotensive effect when avanafil given with ● **ALPHA-BLOCKERS**—when patient is stable on the alpha blocker initiate avanafil at the lowest possible dose
- Antibacterials: plasma concentration of avanafil possibly increased by ● **CLARITHROMYCIN** and ● **TELITHROMYCIN**—manufacturer of avanafil advises avoid concomitant use; plasma concentration of avanafil increased by ● **ERYTHROMYCIN**—see under Avanafil, p. 698; plasma concentration of avanafil possibly reduced by **RIFAMPICIN**—manufacturer of avanafil advises avoid concomitant use
- Antiepileptics: plasma concentration of avanafil possibly reduced by **CARBAMAZEPINE**, **PHENOBARBITAL** and **PRIMIDONE**—manufacturer of avanafil advises avoid concomitant use
- Antifungals: plasma concentration of avanafil increased by ● **KETOCONAZOLE**—avoid concomitant use; plasma concentration of avanafil possibly increased by ● **FLUCONAZOLE**—see under Avanafil, p. 698; plasma concentration of avanafil possibly increased by ● **ITRACONAZOLE** and ● **VORICONAZOLE**—manufacturer of avanafil advises avoid concomitant use
- Antivirals: plasma concentration of avanafil possibly increased by ● **ATAZANAVIR**, ● **INDINAVIR** and ● **SAQUINAVIR**—manufacturer of avanafil advises avoid concomitant use; plasma concentration of avanafil possibly reduced by **EFAVIRENZ**—manufacturer of avanafil advises avoid concomitant use; plasma concentration of avanafil possibly increased by ● **FOSAMPRENAVIR**—see under Avanafil, p. 698; plasma concentration of avanafil significantly increased by ● **RITONAVIR**—avoid concomitant use
- Aprepitant: plasma concentration of avanafil possibly increased by ● **APREPITANT**—see under Avanafil, p. 698
- Bosentan: plasma concentration of avanafil possibly reduced by **BOSENTAN**—manufacturer of avanafil advises avoid concomitant use
- Calcium-channel Blockers: plasma concentration of avanafil possibly increased by ● **DILTIAZEM** and ● **VERAPAMIL**—see under Avanafil, p. 698
- Fosaprepitant: plasma concentration of avanafil possibly increased by **FOSAPREPITANT**
- Grapefruit Juice: plasma concentration of avanafil possibly increased by **GRAPEFRUIT JUICE**—manufacturer of avanafil advises avoid grapefruit juice for 24 hours before avanafil
- Nicorandil: avanafil significantly enhances hypotensive effect of ● **NICORANDIL** (avoid concomitant use)
- Nitrates: avanafil significantly enhances hypotensive effect of ● **NITRATES** (avoid concomitant use)
- Riociguat: possible enhanced hypotensive effect when avanafil given with ● **RIOCIGUAT**—avoid concomitant use

**Axitinib**

- Antibacterials: plasma concentration of axitinib possibly increased by **CLARITHROMYCIN**, **ERYTHROMYCIN** and **TELITHROMYCIN** (reduce dose of axitinib—consult axitinib product literature); plasma concentration of axitinib possibly decreased by **RIFABUTIN** (increase dose of axitinib—consult axitinib product literature); plasma concentration of axitinib decreased by **RIFAMPICIN** (increase dose of axitinib—consult axitinib product literature)
- Antidepressants: plasma concentration of axitinib possibly reduced by **ST JOHN'S WORT**—consider increasing dose of axitinib
- Antiepileptics: plasma concentration of axitinib possibly decreased by **CARBAMAZEPINE**, **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE** (increase dose of axitinib—consult axitinib product literature)
- Antifungals: plasma concentration of axitinib increased by **KETOCONAZOLE** (reduce dose of axitinib—consult axitinib product literature); plasma concentration of axitinib possibly

**Axitinib**

Antifungals (continued)

increased by **ITRACONAZOLE** (reduce dose of axitinib—consult axitinib product literature)

- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)
- ▶ Antivirals: plasma concentration of axitinib possibly increased by **ATAZANAVIR**, **INDINAVIR**, **RITONAVIR** and **SAQUINAVIR** (reduce dose of axitinib—consult axitinib product literature)
- ▶ Corticosteroids: plasma concentration of axitinib possibly decreased by **DEXAMETHASONE** (increase dose of axitinib—consult axitinib product literature)
- ▶ Grapefruit Juice: plasma concentration of axitinib possibly increased by **GRAPEFRUIT JUICE**

**Azathioprine**

- ▶ ACE Inhibitors: increased risk of anaemia or leucopenia when azathioprine given with **CAPTAPRIL** especially in renal impairment; increased risk of anaemia when azathioprine given with **ENALAPRIL** especially in renal impairment
- Allopurinol: enhanced effects and increased toxicity of azathioprine when given with • **ALLOPURINOL** (reduce dose of azathioprine to one quarter of usual dose)
- Antibacterials: increased risk of haematological toxicity when azathioprine given with • **SULFAMETHOXAZOLE** (as co-trimoxazole); increased risk of haematological toxicity when azathioprine given with • **TRIMETHOPRIM** (also with co-trimoxazole)
- Anticoagulants: azathioprine possibly reduces anticoagulant effect of • **COUMARINS**
- Antivirals: myelosuppressive effects of azathioprine possibly enhanced by • **RIBAVIRIN**
- Febuxostat: avoidance of azathioprine advised by manufacturer of • **FEBUXOSTAT**

**Azelastine** see Antihistamines

**Azilsartan** see Angiotensin-II Receptor Antagonists

**Azithromycin** see Macrolides

**Aztreonam**

- Anticoagulants: aztreonam possibly enhances anticoagulant effect of • **COUMARINS**
- ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Baclofen** see Muscle Relaxants

**Bambuterol** see Sympathomimetics, Beta<sub>2</sub>

**Basiliximab**

- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)
- Vaccines: risk of generalised infections when monoclonal antibodies given with live • **VACCINES**—avoid concomitant use

**BCG Vaccine** see Vaccines

**Beclometasone** see Corticosteroids

**Bedaquiline**

- Antibacterials: plasma concentration of bedaquiline possibly increased by **CIPROFLOXACIN**, **CLARITHROMYCIN** and **ERYTHROMYCIN**—avoid concomitant use if ciprofloxacin, clarithromycin and erythromycin given for more than 14 days; manufacturer of bedaquiline advises avoid concomitant use with **MOXIFLOXACIN**; plasma concentration of bedaquiline possibly reduced by **RIFABUTIN**—manufacturer of bedaquiline advises avoid concomitant use; plasma concentration of bedaquiline reduced by • **RIFAMPICIN**—manufacturer of bedaquiline advises avoid concomitant use; possible increased risk of ventricular arrhythmias when bedaquiline given with • **CLOFAZIMINE**
- ▶ Antidepressants: plasma concentration of bedaquiline possibly reduced by **ST JOHN'S WORT**—manufacturer of bedaquiline advises avoid concomitant use
- Antiepileptics: plasma concentration of bedaquiline possibly reduced by • **CARBAMAZEPINE**, • **FOSPHENYTOIN** and • **PHENYTOIN**—manufacturer of bedaquiline advises avoid concomitant use
- ▶ Antifungals: plasma concentration of bedaquiline increased by **KETOCONAZOLE**—avoid concomitant use if ketoconazole given for more than 14 days; plasma concentration of bedaquiline possibly increased by **FLUCONAZOLE**—avoid concomitant use if fluconazole given for more than 14 days

**Bedaquiline** (continued)

- ▶ Antivirals: plasma concentration of bedaquiline possibly reduced by **EFAVIRENZ** and **ETRAVIRINE**—manufacturer of bedaquiline advises avoid concomitant use; plasma concentration of bedaquiline possibly increased by **RITONAVIR**—avoid concomitant use if ritonavir given for more than 14 days
- ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Bee Venom Extracts**

- ACE Inhibitors: possible severe anaphylactoid reaction when bee venom extracts given with • **ACE INHIBITORS**

**Belimumab**

- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)
- Vaccines: risk of generalised infections when monoclonal antibodies given with live • **VACCINES**—avoid concomitant use

**Bendamustine**

- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)

**Bendroflumethiazide** see Diuretics

**Benperidol** see Antipsychotics

**Benzodiazepines** see Anxiolytics and Hypnotics

**Benzthiazide** see Diuretics

**Benzylpenicillin** see Penicillins

**Beta-blockers**

- NOTE** Since systemic absorption may follow topical application of beta-blockers to the eye the possibility of interactions, in particular, with drugs such as verapamil should be borne in mind
- ▶ ACE Inhibitors: enhanced hypotensive effect when beta-blockers given with • **ACE INHIBITORS**
  - ▶ Adrenergic Neurone Blockers: enhanced hypotensive effect when beta-blockers given with **ADRENERGIC NEURONE BLOCKERS**
  - ▶ Alcohol: enhanced hypotensive effect when beta-blockers given with **ALCOHOL**
  - ▶ Aldesleukin: enhanced hypotensive effect when beta-blockers given with **ALDESLEUKIN**
  - Alpha-blockers: enhanced hypotensive effect when beta-blockers given with • **ALPHA-BLOCKERS**, also increased risk of first-dose hypotension with post-synaptic alpha-blockers such as prazosin
  - ▶ Anaesthetics, General: enhanced hypotensive effect when beta-blockers given with **GENERAL ANAESTHETICS**
  - Anaesthetics, Local: propranolol increases risk of • **BUPIVACAINE** toxicity
  - ▶ Analgesics: hypotensive effect of beta-blockers antagonised by **NSAIDS**; plasma concentration of esmolol possibly increased by **MORPHINE**
  - ▶ Angiotensin-II Receptor Antagonists: enhanced hypotensive effect when beta-blockers given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
  - Anti-arrhythmics: increased myocardial depression when beta-blockers given with • **ANTI-ARRHYTHMICS**; increased risk of ventricular arrhythmias when sotalol given with • **AMIODARONE**, • **DISOPYRAMIDE** or • **DRONEDARONE**—avoid concomitant use; increased risk of bradycardia, AV block and myocardial depression when beta-blockers given with • **AMIODARONE**; plasma concentration of metoprolol and propranolol possibly increased by **DRONEDARONE**; increased risk of myocardial depression and bradycardia when beta-blockers given with • **FLECAINIDE**; propranolol increases risk of • **LIDOCAINE** toxicity; nadolol possibly increases risk of **LIDOCAINE** toxicity; plasma concentration of metoprolol and propranolol increased by **PROPAFENONE**
  - Antibacterials: increased risk of ventricular arrhythmias when sotalol given with • **MOXIFLOXACIN**—avoid concomitant use; metabolism of bisoprolol and propranolol accelerated by **RIFAMPICIN** (plasma concentration significantly reduced); plasma concentration of carvedilol, celioprolol and metoprolol reduced by **RIFAMPICIN**; plasma concentration of oral timolol possibly reduced by **RIFAMPICIN**; increased risk of ventricular arrhythmias when sotalol given with • **DELANAMID**
  - Antidepressants: plasma concentration of metoprolol increased by **CITALOPRAM** and **ESCITALOPRAM**; increased risk of



**Beta-blockers**

- Antidepressants (continued)
  - ventricular arrhythmias when sotalol given with
    - **CITALOPRAM**—avoid concomitant use; avoidance of sotalol advised by manufacturer of • **ESCITALOPRAM** (risk of ventricular arrhythmias); plasma concentration of propranolol increased by **FLUVOXAMINE**; plasma concentration of metoprolol possibly increased by • **PAROXETINE**—increased risk of AV block (manufacturer of paroxetine advises avoid concomitant use in cardiac insufficiency); labetalol and propranolol increase plasma concentration of **IMIPRAMINE**; enhanced hypotensive effect when beta-blockers given with **MAOIS**; increased risk of ventricular arrhythmias when sotalol given with • **TRICYCLICS**
- Antidiabetics: beta-blockers may mask warning signs of hypoglycaemia (such as tremor) with **ANTIIDIABETICS**; beta-blockers enhance hypoglycaemic effect of **INSULIN**
- Antiepileptics: plasma concentration of propranolol possibly reduced by **PHENOBARBITAL** and **PRIMIDONE**
- Antifungals: plasma concentration of nadolol possibly increased by **KETOCONAZOLE**
- Antihistamines: increased risk of ventricular arrhythmias when sotalol given with • **MIZOLASTINE**—avoid concomitant use
- Antimalarials: avoidance of metoprolol and sotalol advised by manufacturer of • **ARTEMETHER WITH LUMEFANTRINE**; avoidance of sotalol advised by manufacturer of • **ARTENIMOL WITH PIPERAQUINE** (possible risk of ventricular arrhythmias); increased risk of bradycardia when beta-blockers given with **MEFLOQUINE**
- Antimuscarinics: increased risk of ventricular arrhythmias when sotalol given with • **TOLTERODINE**
- Antipsychotics: increased risk of ventricular arrhythmias when sotalol given with • **DROPERIDOL** or • **ZUCLOPENTHIXOL**—avoid concomitant use; possible increased risk of ventricular arrhythmias when sotalol given with • **HALOPERIDOL**—avoid concomitant use; plasma concentration of both drugs may increase when propranolol given with • **CHLORPROMAZINE**; increased risk of ventricular arrhythmias when sotalol given with • **AMISULPRIDE**, • **PHENOTHIAZINES**, • **PIMOZIDE** or • **SULPIRIDE**; enhanced hypotensive effect when beta-blockers given with **PHENOTHIAZINES**; possible increased risk of ventricular arrhythmias when sotalol given with • **RISPERIDONE**
- Antivirals: increased risk of ventricular arrhythmias when sotalol given with • **SAQUINAVIR**—avoid concomitant use; avoidance of sotalol advised by manufacturer of • **TELAPREVIR** (risk of ventricular arrhythmias); avoidance of metoprolol for heart failure advised by manufacturer of • **TIPRANAVIR**
- Anxiolytics and Hypnotics: enhanced hypotensive effect when beta-blockers given with **ANXIOLYTICS AND HYPNOTICS**
- Atomoxetine: increased risk of ventricular arrhythmias when sotalol given with • **ATOMOXETINE**
- Calcium-channel Blockers: enhanced hypotensive effect when beta-blockers given with **CALCIUM-CHANNEL BLOCKERS**; possible severe hypotension and heart failure when beta-blockers given with • **NIFEDIPINE**; increased risk of AV block and bradycardia when beta-blockers given with • **DILTIAZEM**; asystole, severe hypotension and heart failure when beta-blockers given with • **VERAPAMIL** (see under Verapamil, p. 156)
- Cardiac Glycosides: increased risk of AV block and bradycardia when beta-blockers given with **CARDIAC GLYCOSIDES**
- Ciclosporin: carvedilol increases plasma concentration of • **CICLOSPORIN**
- Clonidine: increased risk of withdrawal hypertension when beta-blockers given with • **CLONIDINE** (withdraw beta-blockers several days before slowly withdrawing clonidine)
- Corticosteroids: hypotensive effect of beta-blockers antagonised by **CORTICOSTEROIDS**
- Cytotoxics: possible increased risk of ventricular arrhythmias when sotalol given with • **BOSUTINIB**; possible increased risk of bradycardia when beta-blockers given with **CRIZOTINIB**; possible increased risk of ventricular arrhythmias when sotalol given with • **VANDETANIB**—avoid concomitant use; increased risk of ventricular arrhythmias when sotalol given with • **ARSENIC TRIOXIDE**

**Beta-blockers (continued)**

- Diazoxide: enhanced hypotensive effect when beta-blockers given with **DIAZOXIDE**
- Diuretics: enhanced hypotensive effect when beta-blockers given with **DIURETICS**; risk of ventricular arrhythmias with sotalol increased by hypokalaemia caused by • **LOOP DIURETICS** or • **THIAZIDES AND RELATED DIURETICS**
- Dopaminergics: enhanced hypotensive effect when beta-blockers given with **CO-BENELDOPA**, **CO-CARELDOPA** or **LEVODOPA**
- Ergot Alkaloids: increased peripheral vasoconstriction when beta-blockers given with **ERGOTAMINE**
- Fingolimod: possible increased risk of bradycardia when beta-blockers given with • **FINGOLIMOD**
- Hormone Antagonists: possible increased risk of bradycardia when carteolol, metoprolol, propranolol or sotalol given with **PASIREOTIDE**
- 5HT<sub>1</sub>-receptor Agonists: propranolol increases plasma concentration of **RIZATRIPTAN** (manufacturer of rizatriptan advises halve dose and avoid within 2 hours of propranolol)
- Ivabradine: increased risk of ventricular arrhythmias when sotalol given with • **IVABRADINE**
- Methyldopa: enhanced hypotensive effect when beta-blockers given with **METHYLDOPA**
- Mirabegron: plasma concentration of metoprolol increased by **MIRABEGRON**
- Moxisylyte: possible severe postural hypotension when beta-blockers given with • **MOXISYLYTE**
- Moxonidine: enhanced hypotensive effect when beta-blockers given with **MOXONIDINE**
- Muscle Relaxants: propranolol enhances effects of **MUSCLE RELAXANTS**; enhanced hypotensive effect when beta-blockers given with **BACLOFEN**; possible enhanced hypotensive effect and bradycardia when beta-blockers given with **TIZANIDINE**
- Nitrates: enhanced hypotensive effect when beta-blockers given with **NITRATES**
- Oestrogens: hypotensive effect of beta-blockers antagonised by **OESTROGENS**
- Parasympathomimetics: propranolol antagonises effects of **NEOSTIGMINE** and **PYRIDOSTIGMINE**; increased risk of arrhythmias when beta-blockers given with **PILOCARPINE**
- Prostaglandins: enhanced hypotensive effect when beta-blockers given with **ALPROSTADIL**
- Ranolazine: avoidance of sotalol advised by manufacturer of • **RANOLAZINE**
- Sympathomimetics: increased risk of severe hypertension and bradycardia when non-cardioselective beta-blockers given with • **ADRENALINE (EPINEPHRINE)**, also response to adrenaline (epinephrine) may be reduced; increased risk of severe hypertension and bradycardia when non-cardioselective beta-blockers given with • **DOBUTAMINE**; possible increased risk of severe hypertension and bradycardia when non-cardioselective beta-blockers given with • **NORADRENALINE (NOREPINEPHRINE)**
- Thyroid Hormones: metabolism of propranolol accelerated by **LEVOTHYROXINE**
- Ulcer-healing Drugs: plasma concentration of labetalol, metoprolol and propranolol increased by **CIMETIDINE**; plasma concentration of oral timolol possibly increased by **CIMETIDINE**
- Vasodilator Antihypertensives: enhanced hypotensive effect when beta-blockers given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**

**Betahistine**

- Antihistamines: effect of betahistine theoretically antagonised by **ANTIHISTAMINES**

**Betamethasone** see Corticosteroids**Betaxolol** see Beta-blockers**Bethanechol** see Parasympathomimetics**Bevacizumab**

- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)
- Vaccines: risk of generalised infections when monoclonal antibodies given with live • **VACCINES**—avoid concomitant use

**Bexarotene**

- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)

**Bexarotene** (continued)

- Lipid-regulating Drugs: plasma concentration of bexarotene increased by ● **GEMFIBROZIL**—avoid concomitant use

**Bezafibrate** see Fibrates**Bicalutamide**

- ▶ Anticoagulants: bicalutamide possibly enhances anticoagulant effect of **COUMARINS**
- ▶ Lipid-regulating Drugs: separating administration from bicalutamide by 12 hours advised by manufacturer of **LOMITAPIDE**

**Biguanides** see Antidiabetics**Bilastine** see Antihistamines**Bile Acid Sequestrants** see Colesevelam, Colestipol, and Colestyramine**Bile Acids**

- ▶ Antacids: absorption of bile acids possibly reduced by **ANTACIDS**
- Closporin: sodium deoxycholic acid increases absorption of ● **CICLOSPORIN**
- ▶ Lipid-regulating Drugs: absorption of bile acids possibly reduced by **COLESTIPOL** and **COLESTYRAMINE**

**Bisoprolol** see Beta-blockers**Bisphosphonates**

- ▶ Antacids: absorption of bisphosphonates reduced by **ANTACIDS**
- ▶ Antibacterials: increased risk of hypocalcaemia when bisphosphonates given with **AMINOGLYCOSIDES**
- ▶ Calcium Salts: absorption of bisphosphonates reduced by **CALCIUM SALTS**
- Cytotoxics: sodium clodronate increases plasma concentration of ● **ESTRAMUSTINE**
- ▶ Iron Salts: absorption of bisphosphonates reduced by *oral* **IRON SALTS**

**Bivalirudin**

- Analgesics: increased risk of haemorrhage when anticoagulants given with *intravenous* ● **DICLOFENAC** (avoid concomitant use, including low-dose heparins); increased risk of haemorrhage when anticoagulants given with ● **KETOROLAC** (avoid concomitant use, including low-dose heparins)
- Anticoagulants: increased risk of haemorrhage when other anticoagulants given with ● **APIXABAN**, ● **DABIGATRAN** and ● **RIVAROXABAN** (avoid concomitant use except when switching with other anticoagulants or using heparin to maintain catheter patency)

**Bleomycin**

- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- ▶ Cardiac Glycosides: bleomycin possibly reduces absorption of **DIGOXIN tablets**
- Cytotoxics: increased risk of pulmonary toxicity when bleomycin given with ● **BRENTUXIMAB VEDOTIN**—avoid concomitant use; increased pulmonary toxicity when bleomycin given with ● **CISPLATIN**

**Boceprevir**

- ▶ Alpha-blockers: boceprevir possibly increases plasma concentration of **DOXAZOSIN** and **TAMSULOSIN**—manufacturer of boceprevir advises avoid concomitant use
- ▶ Analgesics: possible increased risk of prolonged sedation and respiratory depression when boceprevir given with **BUPRENORPHINE**; boceprevir possibly affects plasma concentration of **METHADONE**
- Antibacterials: manufacturer of boceprevir advises avoid concomitant use with ● **RIFAMPICIN** (plasma concentration of boceprevir possibly reduced)
- ▶ Anticoagulants: avoidance of boceprevir advised by manufacturer of **APIXABAN**
- Antiepileptics: manufacturer of boceprevir advises avoid concomitant use with ● **CARBAMAZEPINE**, ● **FOSPHENYTOIN**, ● **PHENOBARBITAL**, ● **PHENYTOIN** and ● **PRIMIDONE** (plasma concentration of boceprevir possibly reduced)
- Antifungals: plasma concentration of boceprevir increased by ● **KETOCONAZOLE**
- Antimalarials: manufacturer of boceprevir advises avoid concomitant use with ● **ARTEMETHER WITH LUMEFRANTINE**

**Boceprevir** (continued)

- Antipsychotics: boceprevir possibly increases plasma concentration of ● **LURASIDONE**—avoid concomitant use; manufacturer of boceprevir advises avoid concomitant use with ● **PIMOZIDE**; boceprevir possibly increases plasma concentration of ● **QUETIAPINE**—manufacturer of quetiapine advises avoid concomitant use
- Antivirals: boceprevir reduces plasma concentration of ● **ATAZANAVIR**; boceprevir possibly increases the plasma concentration of ● **DACLATASVIR**—reduce dose of daclatasvir (see under Daclatasvir, p. 544); avoid concomitant use of boceprevir with ● **DARUNAVIR**; effects of both drugs possibly reduced when boceprevir given with **ETRAVIRINE**; avoidance of boceprevir advised by manufacturer of ● **FOSAMPRENAVIR**, **NEVIRAPINE** and **TIPRANAVIR**; manufacturers advise avoid concomitant use of boceprevir with ● **LOPINAVIR**; boceprevir increases plasma concentration of **MARAVIROC** (consider reducing dose of maraviroc); plasma concentration of both drugs reduced when boceprevir given with ● **RITONAVIR**
- Anxiolytics and Hypnotics: boceprevir increases plasma concentration of *oral* ● **MIDAZOLAM**—manufacturer of boceprevir advises avoid concomitant use
- ▶ Cardiac Glycosides: boceprevir possibly increases side-effects of **DIGOXIN**
- Closporin: boceprevir increases plasma concentration of ● **CICLOSPORIN**
- Cilostazol: boceprevir possibly increases plasma concentration of ● **CILOSTAZOL** (see under Cilostazol, p. 206)
- ▶ Cobicistat: avoidance of boceprevir advised by manufacturer of **COBICISTAT**
- Cytotoxics: boceprevir possibly increases the plasma concentration of ● **BOSUTINIB**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib; manufacturer of boceprevir advises avoid concomitant use with ● **DASATINIB**, ● **ERLOTINIB**, ● **GEFITINIB**, ● **IMATINIB**, ● **LAPATINIB**, ● **NILOTINIB**, ● **PAZOPANIB**, ● **SORAFENIB** and ● **SUNITINIB**; manufacturer of ruxolitinib advises dose reduction when boceprevir given with ● **RUXOLITINIB**—consult ruxolitinib product literature
- Domperidone: possible increased risk of ventricular arrhythmias when boceprevir given with ● **DOMPERIDONE**—avoid concomitant use
- Ergot Alkaloids: manufacturer of boceprevir advises avoid concomitant use with ● **ERGOT ALKALOIDS**
- Lipid-regulating Drugs: boceprevir increases plasma concentration of **ATORVASTATIN** (reduce dose of atorvastatin); boceprevir increases plasma concentration of **PRAVASTATIN**; manufacturers advise avoid concomitant use of boceprevir with ● **SIMVASTATIN**
- ▶ Progestogens: boceprevir increases plasma concentration of **DROSPIRENONE** (increased risk of toxicity)
- Sirolimus: boceprevir increases plasma concentration of ● **SIROLIMUS** (increased risk of toxicity—reduce sirolimus dose)
- Tacrolimus: boceprevir increases plasma concentration of ● **TACROLIMUS** (reduce dose of tacrolimus)

**Bortezomib**

- Antibacterials: plasma concentration of bortezomib reduced by ● **RIFAMPICIN**—manufacturer of bortezomib advises avoid concomitant use
- ▶ Antidepressants: plasma concentration of bortezomib possibly reduced by **ST JOHN'S WORT**—manufacturer of bortezomib advises avoid concomitant use
- ▶ Antiepileptics: plasma concentration of bortezomib possibly reduced by **CARBAMAZEPINE**, **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**—manufacturer of bortezomib advises avoid concomitant use
- ▶ Antifungals: plasma concentration of bortezomib increased by **KETOCONAZOLE**
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)

**Bosentan**

- Antibacterials: plasma concentration of bosentan reduced by ● **RIFAMPICIN**—avoid concomitant use
- ▶ Anticoagulants: manufacturer of bosentan recommends monitoring anticoagulant effect of **COUMARINS**

**Bosentan** (continued)

- Antidiabetics: increased risk of hepatotoxicity when bosentan given with ● **GLIBENCLAMIDE**—avoid concomitant use
- Antifungals: plasma concentration of bosentan increased by **KETOCONAZOLE**; plasma concentration of bosentan possibly increased by ● **FLUCONAZOLE**—avoid concomitant use; plasma concentration of bosentan possibly increased by **ITRACONAZOLE**
- Antivirals: avoidance of bosentan advised by manufacturer of **ELVITEGRAVIR** and **TIPRANAVIR**; bosentan possibly reduces plasma concentration of **INDINAVIR**; plasma concentration of bosentan increased by ● **LOPINAVIR** and ● **RITONAVIR** (consider reducing dose of bosentan); bosentan possibly reduces plasma concentration of **TELAPREVIR**, also plasma concentration of bosentan possibly increased
- Avanafil: bosentan possibly reduces plasma concentration of **AVANAFIL**—manufacturer of avanafil advises avoid concomitant use
- Ciclosporin: plasma concentration of bosentan increased by ● **CICLOSPORIN** (also plasma concentration of ciclosporin reduced—avoid concomitant use)
- Cobicistat: avoidance of bosentan advised by manufacturer of **COBICISTAT**
- Cytotoxics: bosentan possibly reduces plasma concentration of ● **BOSUTINIB**—manufacturer of bosutinib advises avoid concomitant use
- Lipid-regulating Drugs: bosentan reduces plasma concentration of **SIMVASTATIN**
- Oestrogens: bosentan possibly causes contraceptive failure of hormonal contraceptives containing ● **OESTROGENS** (alternative contraception recommended)
- Progestogens: bosentan possibly causes contraceptive failure of hormonal contraceptives containing ● **PROGESTOGENS** (alternative contraception recommended)
- Riociguat: bosentan reduces plasma concentration of **RIOCIGUAT**
- Sildenafil: bosentan reduces plasma concentration of **SILDENAFIL**, also plasma concentration of bosentan increased
- Tadalafil: bosentan reduces plasma concentration of **TADALAFIL**

**Bosutinib**

- Analgesics: possible increased risk of ventricular arrhythmias when bosutinib given with ● **METHADONE**
- Antacids: manufacturer of bosutinib advises separating administration with **ANTACIDS** by about 12 hours
- Anti-arrhythmics: possible increased risk of ventricular arrhythmias when bosutinib given with ● **AMIODARONE** and ● **DISOPYRAMIDE**; plasma concentration of bosutinib possibly increased by ● **DRONEDARONE**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib
- Antibacterials: plasma concentration of bosutinib possibly increased by ● **CIPROFLOXACIN**, ● **CLARITHROMYCIN**, ● **ERYTHROMYCIN** and ● **TELITHROMYCIN**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib; possible increased risk of ventricular arrhythmias when bosutinib given with ● **MOXIFLOXACIN**; plasma concentration of bosutinib possibly reduced by ● **RIFABUTIN**—manufacturer of bosutinib advises avoid concomitant use; plasma concentration of bosutinib reduced by ● **RIFAMPICIN**—manufacturer of bosutinib advises avoid concomitant use
- Antidepressants: plasma concentration of bosutinib possibly reduced by ● **ST JOHN'S WORT**—manufacturer of bosutinib advises avoid concomitant use
- Antiepileptics: plasma concentration of bosutinib possibly reduced by ● **CARBAMAZEPINE**, ● **FOSPHENYTOIN**, ● **PHENOBARBITAL**, ● **PHENYTOIN** and ● **PRIMIDONE**—manufacturer of bosutinib advises avoid concomitant use
- Antifungals: plasma concentration of bosutinib increased by ● **KETOCONAZOLE**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib; plasma concentration of bosutinib possibly increased by ● **FLUCONAZOLE**, ● **ITRACONAZOLE**, ● **POSACONAZOLE** and ● **VORICONAZOLE**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib
- Antimalarials: possible increased risk of ventricular arrhythmias when bosutinib given with ● **CHLOROQUINE** and ● **HYDROXYCHLOROQUINE**

**Bosutinib** (continued)

- Antipsychotics: possible increased risk of ventricular arrhythmias when bosutinib given with ● **HALOPERIDOL**; avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Antivirals: plasma concentration of bosutinib possibly increased by ● **ATAZANAVIR**, ● **BOCEPREVIR**, ● **DARUNAVIR**, ● **FOSAMPRENAVIR**, ● **INDINAVIR**, ● **RITONAVIR**, ● **SAQUINAVIR** and ● **TELAPREVIR**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib; plasma concentration of bosutinib possibly reduced by ● **EFAVIRENZ** and ● **ETRAVIRINE**—manufacturer of bosutinib advises avoid concomitant use
- Aprepitant: plasma concentration of bosutinib possibly increased by ● **APREPITANT**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib
- Beta-blockers: possible increased risk of ventricular arrhythmias when bosutinib given with ● **SOTALOL**
- Bosentan: plasma concentration of bosutinib possibly reduced by ● **BOSENTAN**—manufacturer of bosutinib advises avoid concomitant use
- Calcium-channel Blockers: plasma concentration of bosutinib possibly increased by ● **DILTIAZEM** and ● **VERAPAMIL**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib
- Cytotoxics: plasma concentration of bosutinib possibly increased by ● **IMATINIB**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib
- Domperidone: manufacturer of bosutinib advises avoid concomitant use with ● **DOMPERIDONE** (risk of ventricular arrhythmias)
- Fosaprepitant: plasma concentration of bosutinib possibly increased by ● **FOSAPREPITANT**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib
- Grapefruit Juice: plasma concentration of bosutinib possibly increased by ● **GRAPEFRUIT JUICE**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib
- Modafinil: plasma concentration of bosutinib possibly reduced by ● **MODAFINIL**—manufacturer of bosutinib advises avoid concomitant use
- Ulcer-healing Drugs: plasma concentration of bosutinib reduced by **LANSOPRAZOLE**

**Brentuximab vedotin**

- Antibacterials: effects of brentuximab vedotin possibly reduced by **RIFAMPICIN**
- Antifungals: possible increased risk of neutropenia when brentuximab vedotin given with ● **KETOCONAZOLE**
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Cytotoxics: increased risk of pulmonary toxicity when brentuximab vedotin given with ● **BLEOMYCIN**—avoid concomitant use
- Vaccines: risk of generalised infections when monoclonal antibodies given with live ● **VACCINES**—avoid concomitant use

**Brimonidine**

- Antidepressants: manufacturer of brimonidine advises avoid concomitant use with **MAOIS**, **TRICYCLIC-RELATED ANTIDEPRESSANTS** and **TRICYCLICS**

**Brinzolateamide** see Diuretics**Bromocriptine**

- Alcohol: tolerance of bromocriptine reduced by **ALCOHOL**
- Antibacterials: plasma concentration of bromocriptine increased by **ERYTHROMYCIN** (increased risk of toxicity); plasma concentration of bromocriptine possibly increased by **MACROLIDES** (increased risk of toxicity)
- Antipsychotics: hypoprolactinaemic and antiparkinsonian effects of bromocriptine antagonised by **ANTIPSYCHOTICS**
- Domperidone: hypoprolactinaemic effect of bromocriptine possibly antagonised by **DOMPERIDONE**
- Hormone Antagonists: plasma concentration of bromocriptine increased by **OCTEOTIDE**
- Memantine: effects of dopaminergics possibly enhanced by **MEMANTINE**
- Methyl dopa: antiparkinsonian effect of dopaminergics antagonised by **METHYLDOPA**
- Metoclopramide: hypoprolactinaemic effect of bromocriptine antagonised by **METOCLOPRAMIDE**

**Bromocriptine** (continued)

- Sympathomimetics: risk of toxicity when bromocriptine given with • **ISOMETHEPTENE**

**Buclicline** see Antihistamines**Budesonide** see Corticosteroids**Bumetanide** see Diuretics**Bupivacaine**

- ▶ Anti-arrhythmics: increased myocardial depression when bupivacaine given with **ANTI-ARRHYTHMICS**
- Beta-blockers: increased risk of bupivacaine toxicity when given with • **PROPRANOLOL**

**Buprenorphine** see Opioid Analgesics**Bupropion**

- Antidepressants: bupropion possibly increases plasma concentration of **CITALOPRAM**; manufacturer of bupropion advises avoid for 2 weeks after stopping • **MAOIS**; manufacturer of bupropion advises avoid concomitant use with • **MOCLOBEMIDE**; bupropion possibly increases plasma concentration of **TRICYCLICS** (possible increased risk of convulsions)
- ▶ Antiepileptics: plasma concentration of bupropion reduced by **CARBAMAZEPINE**, **FOSPHENYTOIN** and **PHENYTOIN**; metabolism of bupropion inhibited by **SODIUM VALPROATE** and **VALPROIC ACID**
- ▶ Antivirals: metabolism of bupropion accelerated by **EFAVIRENZ** (reduced plasma concentration); plasma concentration of bupropion reduced by **RITONAVIR**
- ▶ Atomoxetine: possible increased risk of convulsions when bupropion given with **ATOMOXETINE**
- ▶ Dopaminergics: increased risk of side-effects when bupropion given with **AMANTADINE**, **CO-BENELDOPA**, **CO-CARELDOPA** or **LEVODOPA**
- Hormone Antagonists: bupropion possibly inhibits metabolism of • **TAMOXIFEN** to active metabolite (avoid concomitant use)
- Methylthioninium: possible risk of CNS toxicity when bupropion given with • **METHYLTHIONINIUM**—avoid concomitant use (if avoidance not possible, use lowest possible dose of methylthioninium and observe patient for up to 4 hours after administration)

**Buspirone** see Anxiolytics and Hypnotics**Busulfan**

- ▶ Analgesics: metabolism of *intravenous* busulfan possibly inhibited by **PARACETAMOL** (manufacturer of *intravenous* busulfan advises caution within 72 hours of paracetamol)
- Antibacterials: plasma concentration of busulfan increased by • **METRONIDAZOLE** (increased risk of toxicity)
- ▶ Antiepileptics: plasma concentration of busulfan possibly reduced by **FOSPHENYTOIN** and **PHENYTOIN**
- ▶ Antifungals: metabolism of busulfan inhibited by **ITRACONAZOLE** (increased risk of toxicity)
- Antipsychotics: avoid concomitant use of cytotoxics with • **CLOZAPINE** (increased risk of agranulocytosis)
- ▶ Cytotoxics: increased risk of hepatotoxicity when busulfan given with **TIOGUANINE**

**Butyrophenones** see Antipsychotics**Cabazitaxel**

- Antibacterials: plasma concentration of cabazitaxel possibly increased by • **CLARITHROMYCIN** and • **TELITHROMYCIN**—manufacturer of cabazitaxel advises avoid or consider reducing dose of cabazitaxel; manufacturer of cabazitaxel advises avoid concomitant use with • **RIFABUTIN**; plasma concentration of cabazitaxel reduced by • **RIFAMPICIN**—manufacturer of cabazitaxel advises avoid concomitant use
- Antidepressants: manufacturer of cabazitaxel advises avoid concomitant use with • **ST JOHN'S WORT**
- Antiepileptics: manufacturer of cabazitaxel advises avoid concomitant use with • **CARBAMAZEPINE**, • **FOSPHENYTOIN**, • **PHENOBARBITAL**, • **PHENYTOIN** and • **PRIMIDONE**
- Antifungals: manufacturer of cabazitaxel advises avoid concomitant use with • **KETOCONAZOLE**; plasma concentration of cabazitaxel possibly increased by • **ITRACONAZOLE** and • **VORICONAZOLE**—manufacturer of cabazitaxel advises avoid or consider reducing dose of cabazitaxel
- Antipsychotics: avoid concomitant use of cytotoxics with • **CLOZAPINE** (increased risk of agranulocytosis)

**Cabazitaxel** (continued)

- Antivirals: manufacturer of cabazitaxel advises avoid concomitant use with • **ATAZANAVIR**; plasma concentration of cabazitaxel possibly increased by • **INDINAVIR**, • **RITONAVIR** and • **SAQUINAVIR**—manufacturer of cabazitaxel advises avoid or consider reducing dose of cabazitaxel

**Cabergoline**

- ▶ Antibacterials: plasma concentration of cabergoline increased by **ERYTHROMYCIN** (increased risk of toxicity); plasma concentration of cabergoline possibly increased by **MACROLIDES** (increased risk of toxicity)
- ▶ Antipsychotics: hypoprolactinaemic and antiparkinsonian effects of cabergoline antagonised by **ANTIPSYCHOTICS**
- ▶ Domperidone: hypoprolactinaemic effect of cabergoline possibly antagonised by **DOMPERIDONE**
- ▶ Memantine: effects of dopaminergics possibly enhanced by **MEMANTINE**
- ▶ Methyldopa: antiparkinsonian effect of dopaminergics antagonised by **METHYLDOPA**
- ▶ Metoclopramide: hypoprolactinaemic effect of cabergoline antagonised by **METOCLOPRAMIDE**

**Cabozantinib**

- Antibacterials: plasma concentration of cabozantinib possibly increased by **CLARITHROMYCIN** and **ERYTHROMYCIN**; plasma concentration of cabozantinib reduced by • **RIFAMPICIN**—avoid concomitant use
- Antidepressants: plasma concentration of cabozantinib possibly reduced by **ST JOHN'S WORT**—manufacturer of cabozantinib advises avoid concomitant use
- Antiepileptics: plasma concentration of cabozantinib possibly reduced by • **CARBAMAZEPINE**, • **FOSPHENYTOIN**, • **PHENOBARBITAL**, • **PHENYTOIN** and • **PRIMIDONE**—avoid concomitant use
- ▶ Antifungals: plasma concentration of cabozantinib increased by **KETOCONAZOLE**; plasma concentration of cabozantinib possibly increased by **ITRACONAZOLE**
- Antipsychotics: avoid concomitant use of cytotoxics with • **CLOZAPINE** (increased risk of agranulocytosis)
- ▶ Antivirals: plasma concentration of cabozantinib possibly increased by **RITONAVIR**
- ▶ Corticosteroids: plasma concentration of cabozantinib possibly reduced by **DEXAMETHASONE**—manufacturer of cabozantinib advises avoid concomitant use
- ▶ Grapefruit Juice: plasma concentration of cabozantinib possibly increased by **GRAPEFRUIT JUICE**

**Caffeine citrate**

- Aminophylline: manufacturer of caffeine citrate advises avoid concomitant use with **AMINOPHYLLINE**
- ▶ Anti-arrhythmics: caffeine citrate antagonises anti-arrhythmic effect of **ADENOSINE**—manufacturer of adenosine advises avoid caffeine citrate for at least 12 hours before adenosine
- ▶ Antiepileptics: plasma concentration of caffeine citrate reduced by **FOSPHENYTOIN** and **PHENYTOIN**; caffeine citrate possibly antagonises effects of **PHENOBARBITAL** and **PRIMIDONE**
- ▶ Theophylline: manufacturer of caffeine citrate advises avoid concomitant use with **THEOPHYLLINE**
- ▶ Ulcer-healing Drugs: plasma concentration of caffeine citrate increased by **CIMETIDINE**

**Calcitriol** see Vitamins**Calcium Salts**

NOTE see also Antacids

- ▶ Antibacterials: calcium salts reduce absorption of **CIPROFLOXACIN** and **TETRACYCLINE**
- ▶ Antivirals: calcium salts reduce absorption of **DOLUTEGRAVIR**—manufacturer of dolutegravir advises give at least 2 hours before or 6 hours after calcium salts; manufacturer of rilpivirine advises give calcium salts 2 hours before or 4 hours after **RILPIVIRINE**
- ▶ Bisphosphonates: calcium salts reduce absorption of **BISPHOSPHONATES**
- ▶ Cardiac Glycosides: large *intravenous* doses of calcium salts can precipitate arrhythmias when given with **CARDIAC GLYCOSIDES**
- ▶ Corticosteroids: absorption of calcium salts reduced by **CORTICOSTEROIDS**



**Calcium Salts** (continued)

- Cytotoxics: calcium salts reduce absorption of **ESTRAMUSTINE** (manufacturer of estramustine advises avoid concomitant administration)
- Diuretics: increased risk of hypercalcaemia when calcium salts given with **THIAZIDES AND RELATED DIURETICS**
- Eltrombopag: calcium salts possibly reduce absorption of **ELTROMBOPAG** (give at least 4 hours apart)
- Fluorides: calcium salts reduce absorption of **FLUORIDES**
- Iron Salts: calcium salts reduce absorption of **oral IRON SALTS**
- Thyroid Hormones: calcium salts reduce absorption of **LEVOTHYROXINE**
- Zinc: calcium salts reduce absorption of **ZINC**

**Calcium-channel Blockers**

- NOTE** Dihydropyridine calcium-channel blockers include amlodipine, felodipine, isradipine, lacidipine, lercanidipine, nicardipine, nifedipine, and nimodipine
- ACE Inhibitors: enhanced hypotensive effect when calcium-channel blockers given with **ACE INHIBITORS**
  - Adrenergic Neurone Blockers: enhanced hypotensive effect when calcium-channel blockers given with **ADRENERGIC NEURONE BLOCKERS**
  - Alcohol: enhanced hypotensive effect when calcium-channel blockers given with **ALCOHOL**; verapamil possibly increases plasma concentration of **ALCOHOL**
  - Aldesleukin: enhanced hypotensive effect when calcium-channel blockers given with **ALDESLEUKIN**
  - Aliskiren: verapamil increases plasma concentration of **ALISKIREN**
  - Alpha-blockers: verapamil increases plasma concentration of **TAMSULOSIN**; enhanced hypotensive effect when calcium-channel blockers given with • **ALPHA-BLOCKERS**, also increased risk of first-dose hypotension with post-synaptic alpha-blockers such as prazosin
  - Aminophylline: calcium-channel blockers possibly increase plasma concentration of • **AMINOPHYLLINE** (enhanced effect); diltiazem increases plasma concentration of **AMINOPHYLLINE**; verapamil increases plasma concentration of • **AMINOPHYLLINE** (enhanced effect)
  - Anaesthetics, General: enhanced hypotensive effect when calcium-channel blockers given with **GENERAL ANAESTHETICS** or **ISOFLURANE**; hypotensive effect of verapamil enhanced by • **GENERAL ANAESTHETICS** (also AV delay)
  - Analgesics: anaesthetic effect of calcium-channel blockers antagonised by **NSAIDS**; diltiazem inhibits metabolism of **ALFENTANIL** (risk of prolonged or delayed respiratory depression)
  - Angiotensin-II Receptor Antagonists: enhanced hypotensive effect when calcium-channel blockers given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
  - Anti-arrhythmics: increased risk of bradycardia, AV block and myocardial depression when diltiazem or verapamil given with • **AMIODARONE**; increased risk of myocardial depression and asystole when verapamil given with • **DISOPYRAMIDE** or • **FLECAINIDE**; increased risk of bradycardia and myocardial depression when diltiazem and verapamil given with • **DRONEDARONE**; nifedipine increases plasma concentration of • **DRONEDARONE**
  - Antibacterials: metabolism of calcium-channel blockers possibly inhibited by • **CLARITHROMYCIN**, • **ERYTHROMYCIN** and • **TELITHROMYCIN** (increased risk of side-effects); manufacturer of lercanidipine advises avoid concomitant use with **ERYTHROMYCIN**; metabolism of diltiazem, nifedipine, nimodipine and verapamil accelerated by • **RIFAMPICIN** (plasma concentration significantly reduced); metabolism of isradipine and nicardipine possibly accelerated by • **RIFAMPICIN** (possibly significantly reduced plasma concentration); plasma concentration of felodipine possibly reduced by **RIFAMPICIN**; avoidance of verapamil advised by manufacturer of **FIDAXOMICIN**
  - Anticoagulants: verapamil possibly increases plasma concentration of • **DABIGATRAN** (see under Dabigatran Etxelate, p. 117)
  - Antidepressants: metabolism of nifedipine possibly inhibited by **FLUOXETINE** (increased plasma concentration); diltiazem and verapamil increase plasma concentration of **IMIPRAMINE**;

**Calcium-channel Blockers**

- Antidepressants (continued) enhanced hypotensive effect when calcium-channel blockers given with **MAOIS**; plasma concentration of nifedipine reduced by **ST JOHN'S WORT**; plasma concentration of amlodipine and felodipine possibly reduced by **ST JOHN'S WORT**; plasma concentration of verapamil significantly reduced by • **ST JOHN'S WORT**; diltiazem and verapamil possibly increase plasma concentration of **TRICYCLICS**
- Antidiabetics: glucose tolerance occasionally impaired when nifedipine given with **INSULIN**
- Antiepileptics: effects of dihydropyridines, nicardipine and nifedipine probably reduced by **CARBAMAZEPINE**; effects of felodipine and isradipine reduced by **CARBAMAZEPINE**; diltiazem and verapamil enhance effects of • **CARBAMAZEPINE**; manufacturer of nimodipine advises avoid concomitant use with **CARBAMAZEPINE**, **FOSPHENYTOIN** and **PHENYTOIN** (plasma concentration of nimodipine possibly reduced); effects of felodipine and verapamil reduced by **FOSPHENYTOIN**; manufacturer of isradipine advises avoid concomitant use with **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**; diltiazem increases plasma concentration of • **FOSPHENYTOIN** and • **PHENYTOIN** but also effect of diltiazem reduced; effects of calcium-channel blockers probably reduced by • **PHENOBARBITAL** and • **PRIMIDONE**; manufacturer of nimodipine advises avoid concomitant use with • **PHENOBARBITAL** and • **PRIMIDONE** (plasma concentration of nimodipine reduced); effects of felodipine and verapamil reduced by **PHENYTOIN**
- Antifungals: metabolism of dihydropyridines possibly inhibited by **ITRACONAZOLE** and **KETOCONAZOLE** (increased plasma concentration); metabolism of felodipine is inhibited by • **KETOCONAZOLE** (increased plasma concentration)—manufacturer of ketoconazole advises avoid concomitant use; manufacturer of lercanidipine advises avoid concomitant use with **ITRACONAZOLE** and **KETOCONAZOLE**; negative inotropic effect possibly increased when calcium-channel blockers given with **ITRACONAZOLE**; metabolism of felodipine inhibited by • **ITRACONAZOLE** (increased plasma concentration); plasma concentration of nifedipine increased by **MICAFUNGIN**
- Antimalarials: possible increased risk of bradycardia when calcium-channel blockers given with **MEFLOQUINE**
- Antimuscarinics: avoidance of verapamil advised by manufacturer of **DARIFENACIN**; verapamil increases plasma concentration of **SOLIFENACIN**
- Antipsychotics: enhanced hypotensive effect when calcium-channel blockers given with **ANTIPSYCHOTICS**; diltiazem increases the plasma concentration of • **LURASIDONE** (see under Lurasidone, p. 315); verapamil possibly increases the plasma concentration of • **LURASIDONE** (see under Lurasidone, p. 315)
- Antivirals: plasma concentration of verapamil possibly increased by **ATAZANAVIR**; plasma concentration of diltiazem increased by • **ATAZANAVIR** (reduce dose of diltiazem); plasma concentration of diltiazem reduced by **EFAVIRENZ**; manufacturer of lercanidipine advises avoid concomitant use with **RITONAVIR**; plasma concentration of calcium-channel blockers possibly increased by • **RITONAVIR**; caution with diltiazem, felodipine, nicardipine, nifedipine and verapamil advised by manufacturer of **TELAPREVIR**; plasma concentration of amlodipine increased by **TELAPREVIR** (consider reducing dose of amlodipine)
- Anxiolytics and Hypnotics: enhanced hypotensive effect when calcium-channel blockers given with **ANXIOLYTICS AND HYPNOTICS**; diltiazem and verapamil inhibit metabolism of **MIDAZOLAM** (increased plasma concentration with increased sedation); absorption of lercanidipine increased by **MIDAZOLAM**; diltiazem and verapamil increase plasma concentration of **BUSPIRONE** (reduce dose of buspirone)
- Aprepitant: plasma concentration of both drugs may increase when diltiazem given with **APREPITANT**
- Avanafil: diltiazem and verapamil possibly increase plasma concentration of • **AVANAFIL**—see under Avanafil, p. 698
- Beta-blockers: enhanced hypotensive effect when calcium-channel blockers given with **BETA-BLOCKERS**; increased risk of

**Calcium-channel Blockers**

- **Beta-blockers** (continued)
  - AV block and bradycardia when diltiazem given with • **BETA-BLOCKERS**; asystole, severe hypotension and heart failure when verapamil given with • **BETA-BLOCKERS** (see under Verapamil, p. 156); possible severe hypotension and heart failure when nifedipine given with • **BETA-BLOCKERS**
- ▶ **Calcium-channel Blockers**: plasma concentration of both drugs may increase when diltiazem given with **NIFEDIPINE**
- **Cardiac Glycosides**: diltiazem, lercanidipine and nicardipine increase plasma concentration of • **DIGOXIN**; verapamil increases plasma concentration of • **DIGOXIN**, also increased risk of AV block and bradycardia; nifedipine possibly increases plasma concentration of • **DIGOXIN**
- **Ciclosporin**: diltiazem, nicardipine and verapamil increase plasma concentration of • **CICLOSPORIN**; combination of lercanidipine with • **CICLOSPORIN** may increase plasma concentration of either drug (or both)—avoid concomitant use; plasma concentration of nifedipine possibly increased by **CICLOSPORIN** (increased risk of toxicity including gingival hyperplasia)
  - ▶ **Cilostazol**: diltiazem increases plasma concentration of **CILOSTAZOL** (consider reducing dose of cilostazol)
- ▶ **Clonidine**: enhanced hypotensive effect when calcium-channel blockers given with **CLONIDINE**
- **Colchicine**: diltiazem and verapamil possibly increase risk of • **COLCHICINE** toxicity—suspend or reduce dose of colchicine (avoid concomitant use in hepatic or renal impairment)
- ▶ **Corticosteroids**: hypotensive effect of calcium-channel blockers antagonised by **CORTICOSTEROIDS**; diltiazem increases plasma concentration of **METHYLPREDNISOLONE**
- **Cytotoxics**: verapamil possibly increases plasma concentration of **DOXORUBICIN**; verapamil possibly increases the plasma concentration of **AFATINIB**—manufacturer of afatinib advises separating administration of verapamil by 6 to 12 hours; diltiazem and verapamil possibly increase the plasma concentration of • **BOSUTINIB**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib; possible increased risk of bradycardia when diltiazem or verapamil given with **CRIZOTINIB**; plasma concentration of both drugs may increase when verapamil given with • **EVEROLIMUS** (consider reducing the dose of everolimus—consult everolimus product literature); diltiazem and verapamil possibly increase the plasma concentration of • **IBRUTINIB**—reduce dose of ibrutinib (see under Ibrutinib, p. 809); nifedipine possibly inhibits metabolism of **VINCRISTINE**
- ▶ **Dapoxetine**: manufacturer of dapoxetine advises dose reduction when diltiazem and verapamil given with **DAPOXETINE** (see under Dapoxetine, p. 703)
- ▶ **Diazoxide**: enhanced hypotensive effect when calcium-channel blockers given with **DIAZOXIDE**
- ▶ **Diuretics**: enhanced hypotensive effect when calcium-channel blockers given with **DIURETICS**; diltiazem and verapamil increase plasma concentration of **EPLERENONE** (reduce dose of eplerenone)
- ▶ **Dopaminergics**: enhanced hypotensive effect when calcium-channel blockers given with **CO-BENELDOPA**, **CO-CARELDOPA** or **LEVODOPA**
- **Fingolimod**: possible increased risk of bradycardia when diltiazem or verapamil given with • **FINGOLIMOD**
- ▶ **Fosaprepitant**: plasma concentration of both drugs may increase when diltiazem given with **FOSAPREPITANT**
- ▶ **Grapefruit Juice**: plasma concentration of felodipine, isradipine, lacidipine, lercanidipine, nicardipine, nifedipine, nimodipine and verapamil increased by **GRAPEFRUIT JUICE**; plasma concentration of amlodipine possibly increased by **GRAPEFRUIT JUICE**
- ▶ **Hormone Antagonists**: diltiazem and verapamil increase plasma concentration of **DUTASTERIDE**; possible increased risk of bradycardia when diltiazem or verapamil given with **PASIREOTIDE**
- **Ivabradine**: diltiazem and verapamil increase plasma concentration of • **IVABRADINE**—avoid concomitant use
- **Lenalidomide**: verapamil possibly increases plasma concentration of • **LENALIDOMIDE** (increased risk of toxicity)

**Calcium-channel Blockers** (continued)

- **Lipid-regulating Drugs**: diltiazem increases plasma concentration of **ATORVASTATIN**—possible increased risk of myopathy; plasma concentration of verapamil increased by • **ATORVASTATIN**, also possible increased risk of myopathy (consider reducing dose of atorvastatin); possible increased risk of myopathy when amlodipine and diltiazem given with • **SIMVASTATIN** (see under Simvastatin, p. 181); increased risk of myopathy when verapamil given with • **SIMVASTATIN** (see under Simvastatin, p. 181); separating administration from amlodipine and lacidipine by 12 hours advised by manufacturer of **LOMITAPIDE**; avoidance of diltiazem and verapamil advised by manufacturer of • **LOMITAPIDE** (plasma concentration of lomitapide possibly increased)
- ▶ **Lithium**: neurotoxicity may occur when diltiazem or verapamil given with **LITHIUM** without increased plasma concentration of lithium
- **Magnesium** (parenteral): profound hypotension reported with concomitant use of nifedipine and • **PARENTERAL MAGNESIUM** in pre-eclampsia
- ▶ **Methyldopa**: enhanced hypotensive effect when calcium-channel blockers given with **METHYLDOPA**
- ▶ **Moxisylyte**: enhanced hypotensive effect when calcium-channel blockers given with **MOXISYLYTE**
- ▶ **Moxonidine**: enhanced hypotensive effect when calcium-channel blockers given with **MOXONIDINE**
- ▶ **Muscle Relaxants**: verapamil enhances effects of **NON-DEPOLARISING MUSCLE RELAXANTS** and **SUXAMETHONIUM**; enhanced hypotensive effect when calcium-channel blockers given with **BACLOFEN** or **TIZANIDINE**; manufacturer of verapamil advises avoid concomitant use of *intravenous* **DANTROLENE**; possible increased risk of ventricular arrhythmias when diltiazem given with *intravenous* **DANTROLENE**—manufacturer of diltiazem advises avoid concomitant use; calcium-channel blockers possibly enhance effects of **NON-DEPOLARISING MUSCLE RELAXANTS**
- ▶ **Nitrates**: enhanced hypotensive effect when calcium-channel blockers given with **NITRATES**
- ▶ **Oestrogens**: hypotensive effect of calcium-channel blockers antagonised by **OESTROGENS**
- ▶ **Prostaglandins**: enhanced hypotensive effect when calcium-channel blockers given with **ALPROSTADIL**
- ▶ **Ranolazine**: diltiazem and verapamil increase plasma concentration of **RANOLAZINE** (consider reducing dose of ranolazine)
- ▶ **Sildenafil**: enhanced hypotensive effect when amlodipine given with **SILDENAFIL**
- **Sirolimus**: diltiazem increases plasma concentration of • **SIROLIMUS**; plasma concentration of both drugs increased when verapamil given with • **SIROLIMUS**; nicardipine possibly increases plasma concentration of **SIROLIMUS**
- ▶ **Sulfinpyrazone**: plasma concentration of verapamil reduced by **SULFINPYRAZONE**
- **Tacrolimus**: diltiazem, nicardipine and nifedipine increase plasma concentration of • **TACROLIMUS**; felodipine and verapamil possibly increase plasma concentration of **TACROLIMUS**
- **Theophylline**: calcium-channel blockers possibly increase plasma concentration of • **THEOPHYLLINE** (enhanced effect); diltiazem increases plasma concentration of **THEOPHYLLINE**; verapamil increases plasma concentration of • **THEOPHYLLINE** (enhanced effect)
- ▶ **Ticagrelor**: diltiazem increases plasma concentration of **TICAGRELOR**
- ▶ **Ulcer-healing Drugs**: metabolism of calcium-channel blockers possibly inhibited by **CIMETIDINE** (increased plasma concentration); plasma concentration of isradipine increased by **CIMETIDINE** (halve dose of isradipine)
- ▶ **Ulipristal**: avoidance of verapamil advised by manufacturer of *low-dose* **ULIPRISTAL**
- ▶ **Vardenafil**: enhanced hypotensive effect when nifedipine given with **VARDENAFIL**
- ▶ **Vasodilator Antihypertensives**: enhanced hypotensive effect when calcium-channel blockers given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**

**Calcium-channel Blockers (dihydropyridines)** see Calcium-channel Blockers

**Canagliflozin** see Antidiabetics

### Canakinumab

- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)
- Vaccines: risk of generalised infections when monoclonal antibodies given with live • **VACCINES**—avoid concomitant use

**Candesartan** see Angiotensin-II Receptor Antagonists

### Cannabis Extract

- Antibacterials: plasma concentration of cannabis extract reduced by • **RIFAMPICIN**—manufacturer of cannabis extract advises avoid concomitant use
- Antidepressants: plasma concentration of cannabis extract possibly reduced by • **ST JOHN'S WORT**—manufacturer of cannabis extract advises avoid concomitant use; when increased risk of hypertension and tachycardia when cannabis extract given with **TRICYCLICS**
- Antiepileptics: plasma concentration of cannabis extract possibly reduced by • **CARBAMAZEPINE**, • **FOSPHENYTOIN**, • **PHENOBARBITAL**, • **PHENYTOIN** and • **PRIMIDONE**—manufacturer of cannabis extract advises avoid concomitant use
- Antifungals: plasma concentration of cannabis extract increased by **KETOCONAZOLE**

### Capecitabine

- Allopurinol: manufacturer of capecitabine advises avoid concomitant use with • **ALLOPURINOL**
- Antibacterials: metabolism of capecitabine inhibited by **METRONIDAZOLE** (increased toxicity)
- Anticoagulants: capecitabine enhances anticoagulant effect of • **COUMARINS**
- Antiepileptics: capecitabine possibly inhibits metabolism of **FOSPHENYTOIN** and **PHENYTOIN** (increased risk of toxicity)
- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)
- Cytotoxics: capecitabine possibly increases plasma concentration of **ERLOTINIB**
- Filgrastim: neutropenia possibly exacerbated when capecitabine given with **FILGRASTIM**
- Folate: toxicity of capecitabine increased by • **FOLIC ACID**—avoid concomitant use
- Lipofilgrastim: neutropenia possibly exacerbated when capecitabine given with **LIPEFILGRASTIM**
- Pegfilgrastim: neutropenia possibly exacerbated when capecitabine given with **PEGFILGRASTIM**
- Ulcer-healing Drugs: metabolism of capecitabine inhibited by **CIMETIDINE** (increased plasma concentration)

### Caproemycin

- Antibacterials: increased risk of nephrotoxicity when caproemycin given with **COLISTIMETHATE SODIUM** or **POLYMYXINS**; increased risk of nephrotoxicity and ototoxicity when caproemycin given with **AMINOGLYCOSIDES** or **VANCOMYCIN**
- Cytotoxics: increased risk of nephrotoxicity and ototoxicity when caproemycin given with **PLATINUM COMPOUNDS**
- Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Captopril** see ACE Inhibitors

### Carbamazepine

- Alcohol: CNS side-effects of carbamazepine possibly increased by **ALCOHOL**
- Aminophylline: carbamazepine accelerates metabolism of **AMINOPHYLLINE** (reduced effect)
- Analgesics: effects of carbamazepine enhanced by
  - **DEXTROROPROXYPHENE**; carbamazepine possibly accelerates metabolism of **FENTANYL** (reduced effect); carbamazepine reduces plasma concentration of **METHADONE**; carbamazepine reduces effects of **TRAMADOL**; carbamazepine possibly accelerates metabolism of **PARACETAMOL** (also isolated reports of hepatotoxicity)
- Anthelmintics: carbamazepine reduces plasma concentration of • **ALBENDAZOLE** and • **PRAZIQUANTEL**—consider increasing albendazole and praziquantel dose when given for systemic infections

**Carbamazepine** (continued)

- Anti-arrhythmics: carbamazepine possibly reduces plasma concentration of • **DRONEDARONE**—avoid concomitant use
- Antibacterials: plasma concentration of carbamazepine increased by • **CLARITHROMYCIN** (consider reducing dose of carbamazepine); plasma concentration of carbamazepine increased by • **ERYTHROMYCIN**; plasma concentration of carbamazepine reduced by • **RIFABUTIN**; carbamazepine accelerates metabolism of **DOXYCYCLINE** (reduced effect); carbamazepine possibly reduces plasma concentration of • **BEDAQUILINE**—manufacturer of bedaquiline advises avoid concomitant use; avoidance of carbamazepine advised by manufacturer of **DELAMANID**; plasma concentration of carbamazepine increased by • **ISONIAZID** (also possibly increased isoniazid hepatotoxicity); carbamazepine reduces plasma concentration of • **TELITHROMYCIN** (avoid during and for 2 weeks after carbamazepine)
- Anticoagulants: carbamazepine possibly reduces plasma concentration of • **APIXABAN**—manufacturer of apixaban advises avoid concomitant use when given for treatment of deep-vein thrombosis or pulmonary embolism; carbamazepine accelerates metabolism of • **COUMARINS** (reduced anticoagulant effect); carbamazepine possibly reduces plasma concentration of **DABIGATRAN**—manufacturer of dabigatran advises avoid concomitant use; carbamazepine possibly reduces plasma concentration of • **RIVAROXABAN**—manufacturer of rivaroxaban advises monitor for signs of thrombosis
- Antidepressants: carbamazepine possibly reduces plasma concentration of **REBOXETINE**; plasma concentration of carbamazepine increased by • **FLUOXETINE** and • **FLUVOXAMINE**; carbamazepine reduces plasma concentration of • **MIANSERIN**, **MIRTAZAPINE** and **TRAZODONE**; anticonvulsant effect of antiepileptics possibly antagonised by **MAOIs** and • **TRICYCLIC-RELATED ANTIDEPRESSANTS** (convulsive threshold lowered); manufacturer of carbamazepine advises avoid for 2 weeks after stopping • **MAOIs**, also antagonism of anticonvulsant effect; anticonvulsant effect of antiepileptics antagonised by • **SSRIs** and • **TRICYCLICS** (convulsive threshold lowered); plasma concentration of carbamazepine possibly reduced by **ST JOHN'S WORT**; carbamazepine accelerates metabolism of • **TRICYCLICS** (reduced plasma concentration and reduced effect)
- Antiepileptics: carbamazepine possibly reduces plasma concentration of **ESLICARBAZEPINE** but risk of side-effects increased; carbamazepine possibly reduces plasma concentration of **ETHOSUXIMIDE** and **RETIGABINE**; plasma concentration of both drugs often reduced when carbamazepine given with **FOSPHENYTOIN** or **PHENYTOIN**, also plasma concentration of fosphenytoin or phenytoin may be increased; carbamazepine often reduces plasma concentration of **LAMOTRIGINE**, also plasma concentration of an active metabolite of carbamazepine sometimes raised (but evidence is conflicting); possible increased risk of carbamazepine toxicity when given with **LEVETIRACETAM**; plasma concentration of carbamazepine sometimes reduced by **OXCARBAZEPINE** (but concentration of an active metabolite of carbamazepine may be increased), also plasma concentration of an active metabolite of oxcabazepine often reduced; carbamazepine reduces plasma concentration of • **PERAMPANEL** (see under Peramppanel, p. 398); carbamazepine possibly increases plasma concentration of **PHENOBARBITAL** and **PRIMIDONE**; plasma concentration of both drugs possibly reduced when carbamazepine given with **RUFINAMIDE**; carbamazepine reduces plasma concentration of **SODIUM VALPROATE** and **VALPROIC ACID**, also plasma concentration of active metabolite of carbamazepine increased; plasma concentration of carbamazepine increased by • **STIRIPENTOL**; carbamazepine reduces plasma concentration of **TIAGABINE** and **ZONISAMIDE**; carbamazepine often reduces plasma concentration of **TOPIRAMATE**
- Antifungals: plasma concentration of carbamazepine possibly increased by **KETOCONAZOLE**, also plasma concentration of ketoconazole possibly reduced; plasma concentration of carbamazepine possibly increased by **FLUCONAZOLE** and

**Carbamazepine**

- **Antifungals** (continued)
  - **MICONAZOLE**: carbamazepine possibly reduces plasma concentration of **ITRACONAZOLE** and ● **POSACONAZOLE**; carbamazepine possibly reduces plasma concentration of ● **VORICONAZOLE**—avoid concomitant use; carbamazepine possibly reduces plasma concentration of **CASPOFUNGIN**—consider increasing dose of caspofungin
- **Antimalarials**: avoidance of carbamazepine advised by manufacturer of **ARTENIMOL WITH PIPERAQUINE**; anticonvulsant effect of antiepileptics antagonised by ● **MEFLOQUINE**
- **Antipsychotics**: anticonvulsant effect of antiepileptics antagonised by ● **ANTIPSYCHOTICS** (convulsive threshold lowered); carbamazepine accelerates metabolism of **HALOPERIDOL**, **OLANZAPINE**, **QUETIAPINE** and **RISPERIDONE** (reduced plasma concentration); carbamazepine reduces plasma concentration of ● **ARIPRAZOLE** (avoid concomitant use or consider increasing the dose of aripiprazole—consult aripiprazole product literature); carbamazepine accelerates metabolism of ● **CLOZAPINE** (reduced plasma concentration), also avoid concomitant use of drugs with substantial potential for causing agranulocytosis; carbamazepine possibly reduces plasma concentration of ● **LURASIDONE**—avoid concomitant use; carbamazepine reduces plasma concentration of **PALIPERIDONE**
- **Antivirals**: avoidance of carbamazepine advised by manufacturer of ● **BOCEPREVIR** and ● **RILPIVIRINE** (plasma concentration of boceprevir and rilpivirine possibly reduced); carbamazepine possibly reduces plasma concentration of ● **DACLATASVIR** and ● **SIMEPREVIR**—manufacturer of daclatasvir and simeprevir advises avoid concomitant use; carbamazepine possibly reduces plasma concentration of **DARUNAVIR**, **FOSAMPRENAVIR**, **LOPINAVIR**, **SAQUINAVIR** and **TIPRANAVIR**; avoidance of carbamazepine advised by manufacturer of **DOLUTEGRAVIR**, ● **ELVITEGRAVIR**, **ETRAVIRINE**, **SOFOSBUVIR** and ● **TELAPREVIR**; plasma concentration of both drugs reduced when carbamazepine given with **EFAVIRENZ**; carbamazepine possibly reduces plasma concentration of ● **INDINAVIR**, also plasma concentration of carbamazepine possibly increased; carbamazepine reduces plasma concentration of **NEVIRAPINE**; plasma concentration of carbamazepine possibly increased by ● **RITONAVIR**
- ▶ **Anxiolytics and Hypnotics**: carbamazepine often reduces plasma concentration of **CLONAZEPAM**; carbamazepine reduces plasma concentration of **MIDAZOLAM**
- ▶ **Aprepitant**: carbamazepine possibly reduces plasma concentration of **APREPITANT**
- ▶ **Avanafil**: carbamazepine possibly reduces plasma concentration of **AVANAFIL**—manufacturer of avanafil advises avoid concomitant use
- ▶ **Bupropion**: carbamazepine reduces plasma concentration of **BUPROPION**
- **Calcium-channel Blockers**: carbamazepine reduces effects of **FLUDEPINE** and **ISRADIPINE**; carbamazepine probably reduces effects of **DIHYDROPYRIDINES**, **NICARDIPINE** and **NIFEDIPINE**; avoidance of carbamazepine advised by manufacturer of **NIMODIPINE** (plasma concentration of nimodipine possibly reduced); effects of carbamazepine enhanced by ● **DILTIAZEM** and ● **VERAPAMIL**
- **Cannabis Extract**: carbamazepine possibly reduces plasma concentration of ● **CANNABIS EXTRACT**—manufacturer of cannabis extract advises avoid concomitant use
- **Ciclosporin**: carbamazepine accelerates metabolism of ● **CYCLOSPORIN** (reduced plasma concentration)
- **Clopidogrel**: carbamazepine possibly reduces antiplatelet effect of ● **CLOPIDOGREL**
- **Cobicistat**: carbamazepine possibly reduces plasma concentration of ● **COBICISTAT**—manufacturer of cobicistat advises avoid concomitant use
- **Corticosteroids**: carbamazepine accelerates metabolism of ● **CORTICOSTEROIDS** (reduced effect)
- **Cytotoxics**: carbamazepine possibly decreases plasma concentration of **AXITINIB** (increase dose of axitinib—consult axitinib product literature); carbamazepine possibly reduces plasma concentration of **BORTEZOMIB**, ● **BOSUTINIB**, **CRIZOTINIB**, ● **IBRUTINIB**, ● **IDELALISIB** and **PONATINIB**—manufacturer of

**Carbamazepine**

- **Cytotoxics** (continued)
  - bortezomib, bosutinib, crizotinib, ibrutinib, idelalisib and ponatinib advises avoid concomitant use; carbamazepine possibly reduces plasma concentration of ● **CABOZANTINIB**—avoid concomitant use; avoidance of carbamazepine advised by manufacturer of ● **CABAZITAXEL**, **DABRAFENIB**, **GEFITINIB** and **VEMLURAFENIB**; avoidance of carbamazepine advised by manufacturer of **DASATINIB**, **VANDETANIB** and ● **VISMODEGIB** (plasma concentration of dasatinib, vandetanib and vismodegib possibly reduced); carbamazepine reduces plasma concentration of ● **IMATINIB** and ● **LAPATINIB**—avoid concomitant use; carbamazepine possibly reduces plasma concentration of **ERIBULIN**; carbamazepine reduces plasma concentration of **IRINOTECAN** and its active metabolite; manufacturer of procarbazine advises possible increased risk of hypersensitivity reactions when carbamazepine given with **PROCARBAZINE**
- **Diuretics**: increased risk of hyponatraemia when carbamazepine given with **DIURETICS**; plasma concentration of carbamazepine increased by ● **ACETAZOLAMIDE**; carbamazepine reduces plasma concentration of ● **EPLERENONE**—avoid concomitant use
- ▶ **Fingolimod**: carbamazepine reduces plasma concentration of **FINGOLIMOD**
- ▶ **Fosaprepitant**: carbamazepine possibly reduces plasma concentration of **FOSAPREPITANT**
- **Hormone Antagonists**: carbamazepine possibly reduces plasma concentration of ● **ABIRATERONE**—manufacturer of abiraterone advises avoid concomitant use; metabolism of carbamazepine inhibited by ● **DANAZOL** (increased risk of toxicity); carbamazepine possibly accelerates metabolism of **TOREMIFENE** (reduced plasma concentration)
- ▶ **5HT<sub>2</sub>-receptor Antagonists**: carbamazepine accelerates metabolism of **ONDANSETRON** (reduced effect)
- **Ivacaftor**: carbamazepine possibly reduces plasma concentration of ● **IVACAFTOR**—manufacturer of ivacaftor advises avoid concomitant use
- **Lipid-regulating Drugs**: carbamazepine reduces plasma concentration of ● **SIMVASTATIN**—consider increasing dose of simvastatin
- ▶ **Lithium**: neurotoxicity may occur when carbamazepine given with **LITHIUM** without increased plasma concentration of lithium
- ▶ **Macitentan**: avoidance of carbamazepine advised by manufacturer of **MACITENTAN**
- ▶ **Muscle Relaxants**: carbamazepine antagonises muscle relaxant effect of **NON-DEPOLARISING MUSCLE RELAXANTS** (accelerated recovery from neuromuscular blockade)
- **Oestrogens**: carbamazepine accelerates metabolism of ● **OESTROGENS** (reduced contraceptive effect with combined oral contraceptives, contraceptive patches, and vaginal rings—see Contraceptive Interactions in BNF)
- **Orlistat**: possible increased risk of convulsions when antiepileptics given with ● **ORLISTAT**
- **Progestogens**: carbamazepine accelerates metabolism of ● **PROGESTOGENS** (reduced contraceptive effect with combined oral contraceptives, progestogen-only oral contraceptives, contraceptive patches, vaginal rings, etonogestrel-releasing implant, and emergency hormonal contraception—see Contraceptive Interactions in BNF)
- ▶ **Retinoids**: plasma concentration of carbamazepine possibly reduced by **ISOTRETINOIN**
- ▶ **Roflumilast**: carbamazepine possibly inhibits effects of **ROFLUMILAST** (manufacturer of roflumilast advises avoid concomitant use)
- ▶ **Theophylline**: carbamazepine accelerates metabolism of **THEOPHYLLINE** (reduced effect)
- ▶ **Thyroid Hormones**: carbamazepine accelerates metabolism of **THYROID HORMONES** (may increase requirements for thyroid hormones in hypothyroidism)
- ▶ **Tibolone**: carbamazepine accelerates metabolism of **TIBOLONE** (reduced plasma concentration)
- ▶ **Ticagrelor**: carbamazepine possibly reduces plasma concentration of **TICAGRELOR**



**Carbamazepine** (continued)

- Ulcer-healing Drugs: metabolism of carbamazepine inhibited by ● **CIMETIDINE** (increased plasma concentration)
- Ulipristal: avoidance of carbamazepine advised by manufacturer of ● **ULIPRISTAL** (contraceptive effect of ulipristal possibly reduced)
- Vitamins: carbamazepine possibly increases requirements for **ALFACALCIDOL**, **CALCITRIOL**, **COLECALCIFEROL**, **DIHYDROTACHYSTEROL**, **ERGOCALCIFEROL**, **PARICALCITOL** or **VITAMIN D**

**Carbapenems** see Ertapenem, Imipenem with Cilastatin, and Meropenem

**Carbonic Anhydrase Inhibitors** see Diuretics

**Carboplatin** see Platinum Compounds

**Carboprost** see Prostaglandins

**Cardiac Glycosides**

- ACE Inhibitors: plasma concentration of digoxin possibly increased by **CAPTROPIL**
- Alpha-blockers: plasma concentration of digoxin increased by **PRazosin**
- Aminosaliclates: absorption of digoxin possibly reduced by **SULFASALAZINE**
- Analgesics: plasma concentration of cardiac glycosides possibly increased by **NSAIDs**, also possible exacerbation of heart failure and reduction of renal function
- Antacids: absorption of digoxin possibly reduced by **ANTACIDS**
- Anti-arrhythmics: plasma concentration of digoxin increased by ● **AMIODARONE**, ● **DRONEDARONE** and ● **PROPAFENONE** (halve dose of digoxin)
- Antibacterials: plasma concentration of digoxin possibly increased by **GENTAMICIN**, **TELITHROMYCIN** and **TRIMETHOPRIM**; absorption of digoxin reduced by **NEOMYCIN**; plasma concentration of digoxin possibly reduced by **RIFAMPICIN**; plasma concentration of digoxin increased by **MACROLIDES** (increased risk of toxicity)
- Antidepressants: plasma concentration of digoxin reduced by ● **ST JOHN'S WORT**—avoid concomitant use
- Anti-diabetics: plasma concentration of digoxin possibly reduced by **ACARBOSE**; plasma concentration of digoxin increased by **CANAGLIFLOZIN** and **SITAGLIPTIN**
- Antiepileptics: plasma concentration of digoxin possibly reduced by **FOSPHENYTOIN** and **PHENYTOIN**
- Antifungals: increased cardiac toxicity with cardiac glycosides if hypokalaemia occurs with ● **AMPHOTERICIN**; plasma concentration of digoxin increased by ● **ITRACONAZOLE**
- Antimalarials: plasma concentration of digoxin possibly increased by ● **CHLOROQUINE** and ● **HYDROXYCHLOROQUINE**; possible increased risk of bradycardia when digoxin given with **MEFLOQUINE**; plasma concentration of digoxin increased by ● **QUININE**
- Antimuscarinics: plasma concentration of digoxin possibly increased by **DARIFENACIN**
- Antivirals: side-effects of digoxin possibly increased by **BOCEPREVIR**; plasma concentration of digoxin increased by ● **DACLATASVIR**, **ETRAVIRINE**, **SIMEPREVIR** and **TELAPREVIR**; plasma concentration of digoxin possibly increased by **RITONAVIR**
- Anxiolytics and Hypnotics: plasma concentration of digoxin increased by **ALPRAZOLAM** (increased risk of toxicity)
- Beta-blockers: increased risk of AV block and bradycardia when cardiac glycosides given with **BETA-BLOCKERS**
- Calcium Salts: arrhythmias can be precipitated when cardiac glycosides given with large **intravenous doses of CALCIUM SALTS**
- Calcium-channel Blockers: plasma concentration of digoxin increased by ● **DILTIAZEM**, ● **LERCANIDIPINE** and ● **NICARDIPINE**; plasma concentration of digoxin possibly increased by ● **NIVEDIPINE**; plasma concentration of digoxin increased by ● **VERAPAMIL**, also increased risk of AV block and bradycardia
- Ciclosporin: plasma concentration of digoxin increased by ● **CYCLOSPORIN** (increased risk of toxicity)
- Cobistat: plasma concentration of digoxin possibly increased by **COBICISTAT**—reduce initial dose of digoxin
- Colchicine: possible increased risk of myopathy when digoxin given with ● **COLCHICINE**

**Cardiac Glycosides** (continued)

- Corticosteroids: increased risk of hypokalaemia when cardiac glycosides given with **CORTICOSTEROIDS**
- Cytotoxics: absorption of digoxin **tablets** possibly reduced by **BLEOMYCIN**, **CARMUSTINE**, **CYCLOPHOSPHAMIDE**, **CYTARABINE**, **DOXORUBICIN**, **MELPHALAN**, **METHOTREXATE**, **PROCARBAZINE** and **VINCISTINE**; possible increased risk of bradycardia when digoxin given with **CRIZOTINIB**; manufacturer of digoxin advises give **IBRUTINIB** at least 6 hours before or after ibrutinib; plasma concentration of digoxin increased by **VANDETANIB**—possible increased risk of bradycardia
- Diuretics: increased cardiac toxicity with cardiac glycosides if hypokalaemia occurs with ● **ACETAZOLAMIDE**, ● **LOOP DIURETICS** or ● **THIAZIDES AND RELATED DIURETICS**; plasma concentration of digoxin possibly increased by **POTASSIUM CANRENOATE**; plasma concentration of digoxin increased by ● **SPIRONOLACTONE**
- Ivacaftor: plasma concentration of digoxin increased by **IVACAFTOR**
- Lenalidomide: plasma concentration of digoxin possibly increased by **LENALIDOMIDE**
- Lipid-regulating Drugs: absorption of cardiac glycosides possibly reduced by **COLESTIPOL** and **COLESTYRAMINE**; plasma concentration of digoxin possibly increased by **ATORVASTATIN**
- Mirabegron: plasma concentration of digoxin increased by **MIRABEGRON**—reduce initial dose of digoxin
- Muscle Relaxants: risk of ventricular arrhythmias when cardiac glycosides given with **SUXAMETHONIUM**; possible increased risk of bradycardia when cardiac glycosides given with **TIZANIDINE**
- Penicillamine: plasma concentration of digoxin possibly reduced by **PENICILLAMINE**
- Ranolazine: plasma concentration of digoxin increased by **RANOLAZINE**
- Sympathomimetics, Beta: plasma concentration of digoxin possibly reduced by **SALBUTAMOL**
- Ticagrelor: plasma concentration of digoxin increased by ● **TICAGRELOR**
- Tolvaptan: plasma concentration of digoxin increased by **TOLVAPTAN** (increased risk of toxicity)
- Ulcer-healing Drugs: plasma concentration of digoxin possibly slightly increased by **PROTON PUMP INHIBITORS**; absorption of cardiac glycosides possibly reduced by **SUCRALFATE**
- Ulipristal: manufacturer of ulipristal advises give digoxin at least 15 hours before or after **ULIPRISTAL**

**Carmustine**

- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Cardiac Glycosides: carmustine possibly reduces absorption of **DIGOXIN tablets**
- Ulcer-healing Drugs: myelosuppressive effects of carmustine possibly enhanced by **CIMETIDINE**

**Carteolol** see Beta-blockers

**Carvedilol** see Beta-blockers

**Caspofungin**

- Antibacterials: plasma concentration of caspofungin initially increased and then reduced by **RIFAMPICIN** (consider increasing dose of caspofungin)
- Antiepileptics: plasma concentration of caspofungin possibly reduced by **CARBAMAZEPINE**, **FOSPHENYTOIN** and **PHENYTOIN**—consider increasing dose of caspofungin
- Antivirals: plasma concentration of caspofungin possibly reduced by **EFAVIRENZ** and **NEVIRAPINE**—consider increasing dose of caspofungin
- Ciclosporin: plasma concentration of caspofungin increased by ● **CYCLOSPORIN** (manufacturer of caspofungin recommends monitoring liver enzymes)
- Corticosteroids: plasma concentration of caspofungin possibly reduced by **DEXAMETHASONE**—consider increasing dose of caspofungin
- Tacrolimus: caspofungin reduces plasma concentration of ● **TACROLIMUS**

**Catumaxomab**

- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)

**Catumaxomab** (continued)

- Vaccines: risk of generalised infections when monoclonal antibodies given with live ● **VACCINES**—avoid concomitant use

**Cefaclor** see Cephalosporins**Cefadroxil** see Cephalosporins**Cefalexin** see Cephalosporins**Cefixime** see Cephalosporins**Cefotaxime** see Cephalosporins**Cefradine** see Cephalosporins**Ceftaroline** see Cephalosporins**Ceftazidime** see Cephalosporins**Ceftriaxone** see Cephalosporins**Cefuroxime** see Cephalosporins**Celecoxib** see NSAIDs**Celiprolol** see Beta-blockers**Cephalosporins**

- ▶ Antacids: absorption of cefaclor reduced by **ANTACIDS**
- ▶ Antibacterials: possible increased risk of nephrotoxicity when cephalosporins given with **AMINOGLYCOSIDES**
- Anticoagulants: cephalosporins possibly enhance anticoagulant effect of ● **COUMARINS**
- ▶ Teriflunomide: plasma concentration of cefaclor increased by **TERIFLUNOMIDE**
- ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Certolizumab pegol**

- Abatacept: avoid concomitant use of certolizumab pegol with ● **ABATACEPT**
- Anakinra: avoid concomitant use of certolizumab pegol with ● **ANAKINRA**
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Vaccines: risk of generalised infections when monoclonal antibodies given with live ● **VACCINES**—avoid concomitant use

**Cetirizine** see Antihistamines**Cetuximab**

- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Vaccines: risk of generalised infections when monoclonal antibodies given with live ● **VACCINES**—avoid concomitant use

**Chenodeoxycholic Acid** see Bile Acids**Chloral** see Anxiolytics and Hypnotics**Chloramphenicol**

- ▶ Antibacterials: metabolism of chloramphenicol accelerated by **RIFAMPICIN** (reduced plasma concentration)
- Anticoagulants: chloramphenicol enhances anticoagulant effect of ● **COUMARINS**
- Antidiabetics: chloramphenicol enhances effects of ● **SULFONYLUREAS**
- Antiepileptics: chloramphenicol increases plasma concentration of ● **FOSPHENYTOIN** and ● **PHENYTOIN** (increased risk of toxicity); metabolism of chloramphenicol possibly accelerated by ● **PHENOBARBITAL** and ● **PRIMIDONE** (reduced plasma concentration)
- Antipsychotics: avoid concomitant use of chloramphenicol with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Ciclosporin: chloramphenicol possibly increases plasma concentration of ● **CICLOSPORIN**
- Clopidogrel: chloramphenicol possibly reduces antiplatelet effect of ● **CLOPIDOGREL**
- ▶ Hydroxocobalamin: chloramphenicol reduces response to **HYDROXOCOBALAMIN**
- Tacrolimus: chloramphenicol possibly increases plasma concentration of ● **TACROLIMUS**
- ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Chlordiazepoxide** see Anxiolytics and Hypnotics**Chloroprocaine**

- Antibacterials: chloroprocaine possibly inhibits effects of ● **SULFONAMIDES** (manufacturer of chloroprocaine advises avoid concomitant use)

**Chloroquine**

- ▶ Adsorbents: absorption of chloroquine reduced by **KAOLIN**

**Chloroquine** (continued)

- ▶ Agalsidase Alfa and Beta: chloroquine possibly inhibits effects of **AGALSIDASE ALFA AND BETA** (manufacturers of agalsidase alfa and beta advise avoid concomitant use)
- ▶ Antacids: absorption of chloroquine reduced by **ANTACIDS**
- Anthelmintics: chloroquine reduces plasma concentration of ● **PRAZIQUANTEL**—consider increasing praziquantel dose when given for systemic infections
- Anti-arrhythmics: increased risk of ventricular arrhythmias when chloroquine given with ● **AMIODARONE**—avoid concomitant use
- Antibacterials: increased risk of ventricular arrhythmias when chloroquine given with ● **MOXIFLOXACIN**—avoid concomitant use
- Antidepressants: possible increased risk of ventricular arrhythmias when chloroquine given with ● **CITALOPRAM** and ● **ESCITALOPRAM**
- Antimalarials: avoidance of antimalarials advised by manufacturer of ● **ARTEMETER WITH LUMEFANTRINE**; increased risk of convulsions when chloroquine given with ● **MEFLOQUINE**
- Antipsychotics: increased risk of ventricular arrhythmias when chloroquine given with ● **DROPERIDOL**—avoid concomitant use
- Cardiac Glycosides: chloroquine possibly increases plasma concentration of ● **DIGOXIN**
- Ciclosporin: chloroquine increases plasma concentration of ● **CICLOSPORIN** (increased risk of toxicity)
- Cytotoxics: possible increased risk of ventricular arrhythmias when chloroquine given with ● **BOSUTINIB**
- ▶ Histamine: avoidance of antimalarials advised by manufacturer of **HISTAMINE**
- ▶ Lanthanum: absorption of chloroquine possibly reduced by **LANTHANUM** (give at least 2 hours apart)
- ▶ Laronidase: chloroquine possibly inhibits effects of **LARONIDASE** (manufacturer of laronidase advises avoid concomitant use)
- ▶ Parasympathomimetics: chloroquine has potential to increase symptoms of myasthenia gravis and thus diminish effect of **NEOSTIGMINE** and **PYRIDOSTIGMINE**
- ▶ Ulcer-healing Drugs: metabolism of chloroquine inhibited by **CIMETIDINE** (increased plasma concentration)
- ▶ Vaccines: antimalarials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Chlorothiazide** see Diuretics**Chlorphenamine** see Antihistamines**Chlorpromazine** see Antipsychotics**Chlortalidone** see Diuretics**Cholera Vaccine** see Vaccines**Ciclesonide** see Corticosteroids**Ciclosporin**

- ACE Inhibitors: increased risk of hyperkalaemia when ciclosporin given with ● **ACE INHIBITORS**
- Aliskiren: ciclosporin increases plasma concentration of ● **ALISKIREN**—avoid concomitant use
- ▶ Allopurinol: plasma concentration of ciclosporin possibly increased by **ALLOPURINOL** (risk of nephrotoxicity)
- Ambrisentan: ciclosporin increases plasma concentration of ● **AMBRISENTAN** (see under Ambrisentan, p. 162)
- Analgesics: increased risk of nephrotoxicity when ciclosporin given with ● **NSAIDS**; ciclosporin increases plasma concentration of ● **DICLOFENAC** (halve dose of diclofenac)
- Angiotensin-II Receptor Antagonists: increased risk of hyperkalaemia when ciclosporin given with ● **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- ▶ Anti-arrhythmics: plasma concentration of ciclosporin possibly increased by **AMIODARONE** and **PROPAFENONE**
- Antibacterials: metabolism of ciclosporin inhibited by ● **CLARITHROMYCIN** and ● **ERYTHROMYCIN** (increased plasma concentration); metabolism of ciclosporin accelerated by ● **RIFAMPICIN** (reduced plasma concentration); plasma concentration of ciclosporin possibly reduced by ● **SULFADIAZINE**; increased risk of nephrotoxicity when ciclosporin given with ● **AMINOGLYCOSIDES**, ● **POLYMYXINS**, ● **QUINOLONES**, ● **SULFONAMIDES** or ● **VANCOMYCIN**; plasma concentration of ciclosporin possibly increased by

**Ciclosporin**

- **Antibacterials** (continued)
  - **CHLORAMPHENICOL** and • **TELITHROMYCIN**; increased risk of myopathy when ciclosporin given with • **DAPTOMYCIN** (preferably avoid concomitant use); avoidance of ciclosporin advised by manufacturer of **FIDAXOMICIN**; metabolism of ciclosporin possibly inhibited by • **MACROLIDES** (increased plasma concentration); increased risk of nephrotoxicity when ciclosporin given with • **TRIMETHOPRIM**, also plasma concentration of ciclosporin reduced by *intravenous* trimethoprim
- **Anticoagulants**: ciclosporin possibly increases plasma concentration of • **DABIGATRAN**—manufacturer of dabigatran advises avoid concomitant use
- **Antidepressants**: plasma concentration of ciclosporin reduced by • **ST JOHN'S WORT**—avoid concomitant use
- **Antidiabetics**: ciclosporin possibly enhances hypoglycaemic effect of **REPAGLINIDE**
- **Antiepileptics**: metabolism of ciclosporin accelerated by • **CARBAMAZEPINE**, • **FOSPHENYTOIN**, • **PHENOBARBITAL**, • **PHENYTOIN** and • **PRIMIDONE** (reduced plasma concentration); plasma concentration of ciclosporin possibly reduced by **OXCARBAPINE**
- **Antifungals**: metabolism of ciclosporin inhibited by • **FLUCONAZOLE**, • **ITRACONAZOLE**, • **KETOCONAZOLE**, • **POSACONAZOLE** and • **VORICONAZOLE** (increased plasma concentration); metabolism of ciclosporin possibly inhibited by • **MICONAZOLE** (increased plasma concentration); increased risk of nephrotoxicity when ciclosporin given with • **AMPHOTERICIN**; ciclosporin increases plasma concentration of • **CASPOFUNGIN** (manufacturer of caspofungin recommends monitoring liver enzymes); plasma concentration of ciclosporin possibly reduced by **GRISEOFULVIN** and **TERBINAFINE**; plasma concentration of ciclosporin possibly increased by **MICAFUNGIN**
- **Antimalarials**: plasma concentration of ciclosporin increased by • **CHLOROQUINE** and • **HYDROXYCHLOROQUINE** (increased risk of toxicity)
  - **Antimuscarinics**: avoidance of ciclosporin advised by manufacturer of **DARIFENACIN**
- **Antivirals**: increased risk of nephrotoxicity when ciclosporin given with **ACICLOVIR** or **VALACICLOVIR**; plasma concentration of ciclosporin possibly increased by • **ATAZANAVIR** and • **RITONAVIR**; plasma concentration of ciclosporin increased by • **BOCEPREVIR**, • **FOSAMPRENAVIR** and • **INDINAVIR**; plasma concentration of ciclosporin possibly reduced by • **EFAVIRENZ**; plasma concentration of both drugs increased when ciclosporin given with • **SAQUINAVIR**; plasma concentration of both drugs increased when ciclosporin given with • **TELAPREVIR** (reduce dose of ciclosporin)
- **Beta-blockers**: plasma concentration of ciclosporin increased by • **CARVEDILOL**
- **Bile acids**: absorption of ciclosporin increased by • **URSODEOXYCHOLIC ACID**
- **Bosentan**: ciclosporin increases plasma concentration of • **BOSENTAN** (also plasma concentration of ciclosporin reduced—avoid concomitant use)
- **Calcium-channel Blockers**: combination of ciclosporin with • **LERCANIDIPINE** may increase plasma concentration of either drug (or both)—avoid concomitant use; plasma concentration of ciclosporin increased by • **DILTIAZEM**, • **NICARDIPINE** and • **VERAPAMIL**; ciclosporin possibly increases plasma concentration of **NIFEDIPINE** (increased risk of toxicity including gingival hyperplasia)
- **Cardiac Glycosides**: ciclosporin increases plasma concentration of • **DIGOXIN** (increased risk of toxicity)
- **Colchicine**: possible increased risk of nephrotoxicity and myotoxicity when ciclosporin given with • **COLCHICINE**—suspend or reduce dose of colchicine (avoid concomitant use in hepatic or renal impairment)
- **Colestilan**: manufacturer of colestilan advises give ciclosporin at least 1 hour before or 3 hours after **COLESTILAN**
- **Corticosteroids**: plasma concentration of ciclosporin increased by high-dose • **METHYLPREDNISOLONE** (risk of convulsions); ciclosporin increases plasma concentration of **PREDNISOLONE**

**Ciclosporin** (continued)

- **Cytotoxics**: increased risk of nephrotoxicity when ciclosporin given with • **MELPHALAN**; increased risk of neurotoxicity when ciclosporin given with • **DOXORUBICIN**; ciclosporin increases plasma concentration of • **EPIRUBICIN** and • **IDARUBICIN**; ciclosporin reduces excretion of **MITOXANTRONE** (increased plasma concentration); risk of toxicity when ciclosporin given with • **METHOTREXATE**; ciclosporin possibly increases the plasma concentration of **AFATINIB**—manufacturer of afatinib advises separating administration of ciclosporin by 6 to 12 hours; caution with ciclosporin advised by manufacturer of • **CRIZOTINIB**; ciclosporin increases plasma concentration of • **EVEROLIMUS** (consider reducing the dose of everolimus—consult everolimus product literature); plasma concentration of ciclosporin possibly increased by **IMATINIB**; *in vitro* studies suggest a possible interaction between ciclosporin and **DOCETAXEL** (consult docetaxel product literature); ciclosporin possibly increases plasma concentration of **ETOPOSIDE** (increased risk of toxicity)
  - **Dexrazoxane**: increased risk of immunosuppression with ciclosporin advised by manufacturer of **DEXRAZOXANE**
- **Diuretics**: plasma concentration of ciclosporin possibly increased by • **ACETAZOLAMIDE**; increased risk of hyperkalaemia when ciclosporin given with • **POTASSIUM-SPARING DIURETICS** and **ALDOSTERONE ANTAGONISTS**; increased risk of nephrotoxicity and possibly hypermagnesaemia when ciclosporin given with **THIAZIDES AND RELATED DIURETICS**
- **Grapefruit Juice**: plasma concentration of ciclosporin increased by • **GRAPEFRUIT JUICE** (increased risk of toxicity)
- **Hormone Antagonists**: metabolism of ciclosporin inhibited by • **DANAZOL** (increased plasma concentration); plasma concentration of ciclosporin reduced by **LANREOTIDE** and • **OCTREOTIDE**; plasma concentration of ciclosporin possibly reduced by • **PASIREOTIDE**
- **Lenalidomide**: ciclosporin possibly increases plasma concentration of • **LENALIDOMIDE** (increased risk of toxicity)
- **Lipid-regulating Drugs**: absorption of ciclosporin reduced by • **COLESEVELAM**; increased risk of renal impairment when ciclosporin given with **BEZAFIBRATE** or **FENOFIBRATE**; increased risk of myopathy when ciclosporin given with • **ATORVASTATIN** (see under Atorvastatin, p. 179); increased risk of myopathy when ciclosporin given with • **FLUVASTATIN** or • **PRAVASTATIN**; increased risk of myopathy when ciclosporin given with • **ROSUVASTATIN** or • **SIMVASTATIN** (avoid concomitant use); plasma concentration of both drugs may increase when ciclosporin given with • **EZETIMIBE**; separating administration from ciclosporin by 12 hours advised by manufacturer of **LOMITAPIDE**
  - **Mannitol**: possible increased risk of nephrotoxicity when ciclosporin given with **MANNITOL**
- **Metoclopramide**: plasma concentration of ciclosporin increased by • **METOCLOPRAMIDE**
- **Mifamurtide**: avoidance of ciclosporin advised by manufacturer of **MIFAMURTIDE**
- **Modafinil**: plasma concentration of ciclosporin reduced by • **MODAFINIL**
- **Oestrogens**: plasma concentration of ciclosporin possibly increased by **OESTROGENS**
- **Orlistat**: absorption of ciclosporin possibly reduced by • **ORLISTAT**
- **Potassium Salts**: increased risk of hyperkalaemia when ciclosporin given with • **POTASSIUM SALTS**
- **Progestogens**: plasma concentration of ciclosporin possibly increased by **PROGESTOGENS**
- **Ranolazine**: plasma concentration of both drugs may increase when ciclosporin given with **RANOLAZINE**
- **Sevelamer**: plasma concentration of ciclosporin possibly reduced by **SEVELAMER**
- **Sirolimus**: ciclosporin increases plasma concentration of **SIROLIMUS**
- **Sulfinpyrazone**: plasma concentration of ciclosporin reduced by • **SULFINPYRAZONE**
- **Tacrolimus**: plasma concentration of ciclosporin increased by • **TACROLIMUS** (increased risk of nephrotoxicity)—avoid concomitant use

**Ciclosporin** (continued)

- ▶ Ticagrelor: ciclosporin increases plasma concentration of **TICAGRELOR**
- Ulcer-healing Drugs: plasma concentration of ciclosporin possibly increased by ● **CIMETIDINE**; plasma concentration of ciclosporin possibly affected by **OMEPRAZOLE**
- ▶ Vitamins: plasma concentration of ciclosporin possibly affected by **VITAMIN E**

**Cilostazol**

- Anagrelide: avoidance of cilostazol advised by manufacturer of ● **ANAGRELIDE**
- Antibacterials: plasma concentration of cilostazol possibly increased by ● **CLARITHROMYCIN** (see under Cilostazol, p. 206); plasma concentration of cilostazol increased by ● **ERYTHROMYCIN** (see under Cilostazol, p. 206)
- Antifungals: plasma concentration of cilostazol increased by ● **KETOCONAZOLE** (see under Cilostazol, p. 206); plasma concentration of cilostazol possibly increased by ● **ITRACONAZOLE** (see under Cilostazol, p. 206)
- Antivirals: plasma concentration of cilostazol possibly increased by ● **BOCEPREVIR**, ● **RITONAVIR** and ● **TELAPREVIR** (see under Cilostazol, p. 206)
- ▶ Calcium-channel Blockers: plasma concentration of cilostazol increased by **DILTIAZEM** (consider reducing dose of cilostazol)
- ▶ Lipid-regulating Drugs: separating administration from cilostazol by 12 hours advised by manufacturer of **LOMITAPIDE**
- Ulcer-healing Drugs: plasma concentration of cilostazol increased by ● **OMEPRAZOLE** (see under Cilostazol, p. 206)

**Cimetidine** see Histamine H<sub>2</sub>-antagonists

**Cinacalcet**

- ▶ Antifungals: metabolism of cinacalcet inhibited by **KETOCONAZOLE** (increased plasma concentration)
- Hormone Antagonists: cinacalcet possibly inhibits metabolism of ● **TAMOXIFEN** to active metabolite (avoid concomitant use)

**Cinnarizine** see Antihistamines

**Ciprofibrate** see Fibrates

**Ciprofloxacin** see Quinolones

**Cisatracurium** see Muscle Relaxants

**Cisplatin** see Platinum Compounds

**Citalopram** see Antidepressants, SSRI

**Cladribine**

- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Antivirals: avoidance of cladribine advised by manufacturer of ● **LAMIVUDINE**

**Clarithromycin** see Macrolides

**Clemastine** see Antihistamines

**Clindamycin**

- Muscle Relaxants: clindamycin enhances effects of ● **NON-DEPOLARISING MUSCLE RELAXANTS** and ● **SUXAMETHONIUM**
- Parasympathomimetics: clindamycin antagonises effects of **NEOSTIGMINE** and **PYRIDOSTIGMINE**
- ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Clobazam** see Anxiolytics and Hypnotics

**Clofazimine**

- Antibacterials: possible increased risk of ventricular arrhythmias when clofazimine given with ● **BEDAQUILINE**
- ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Clomethiazole** see Anxiolytics and Hypnotics

**Clomipramine** see Antidepressants, Tricyclic

**Clonazepam** see Anxiolytics and Hypnotics

**Clonidine**

- ▶ ACE Inhibitors: enhanced hypotensive effect when clonidine given with **ACE INHIBITORS**; previous treatment with clonidine possibly delays antihypertensive effect of **CAPTOPRIL**
- ▶ Adrenergic Neurone Blockers: enhanced hypotensive effect when clonidine given with **ADRENERGIC NEURONE BLOCKERS**
- ▶ Alcohol: enhanced hypotensive effect when clonidine given with **ALCOHOL**
- ▶ Aldesleukin: enhanced hypotensive effect when clonidine given with **ALDESLEUKIN**
- ▶ Alpha-blockers: enhanced hypotensive effect when clonidine given with **ALPHA-BLOCKERS**

**Clonidine** (continued)

- ▶ Anaesthetics, General: enhanced hypotensive effect when clonidine given with **GENERAL ANAESTHETICS**
  - ▶ Analgesics: hypotensive effect of clonidine antagonised by **NSAIDS**
  - ▶ Angiotensin-II Receptor Antagonists: enhanced hypotensive effect when clonidine given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
  - Antidepressants: enhanced hypotensive effect when clonidine given with **MAOIs**; hypotensive effect of clonidine possibly antagonised by ● **TRICYCLICS**, also increased risk of hypertension on clonidine withdrawal
  - ▶ Antipsychotics: enhanced hypotensive effect when clonidine given with **PHENOTHIAZINES**
  - ▶ Anxiolytics and Hypnotics: enhanced hypotensive effect when clonidine given with **ANXIOLYTICS AND HYPNOTICS**
  - Beta-blockers: increased risk of withdrawal hypertension when clonidine given with ● **BETA-BLOCKERS** (withdraw beta-blockers several days before slowly withdrawing clonidine)
  - ▶ Calcium-channel Blockers: enhanced hypotensive effect when clonidine given with **CALCIUM-CHANNEL BLOCKERS**
  - ▶ Corticosteroids: hypotensive effect of clonidine antagonised by **CORTICOSTEROIDS**
  - ▶ Cytotoxics: possible increased risk of bradycardia when clonidine given with **CRIZOTINIB**
  - ▶ Diazoxide: enhanced hypotensive effect when clonidine given with **DIAZOXIDE**
  - ▶ Diuretics: enhanced hypotensive effect when clonidine given with **DIURETICS**
  - ▶ Dopaminergics: enhanced hypotensive effect when clonidine given with **CO-BENELDOPA**, **CO-CARELDOPA** or **LEVODOPA**
  - ▶ Histamine: avoidance of clonidine advised by manufacturer of **HISTAMINE**
  - ▶ Methyldopa: enhanced hypotensive effect when clonidine given with **METHYLDOPA**
  - ▶ Moxislyte: enhanced hypotensive effect when clonidine given with **MOXISLYTE**
  - ▶ Moxonidine: enhanced hypotensive effect when clonidine given with **MOXONIDINE**
  - ▶ Muscle Relaxants: enhanced hypotensive effect when clonidine given with **BACLOFEN** or **TIZANIDINE**
  - ▶ Nitrates: enhanced hypotensive effect when clonidine given with **NITRATES**
  - ▶ Oestrogens: hypotensive effect of clonidine antagonised by **OESTROGENS**
  - ▶ Prostaglandins: enhanced hypotensive effect when clonidine given with **ALPROSTADIL**
  - Sympathomimetics: possible risk of hypertension when clonidine given with **ADRENALINE (EPINEPHRINE)** or **NORADRENALINE (NOREPINEPHRINE)**; serious adverse events reported with concomitant use of clonidine and ● **METHYLPHENIDATE** (causality not established)
  - ▶ Vasodilator Antihypertensives: enhanced hypotensive effect when clonidine given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**
- Clopidamide** see Diuretics
- Clopidogrel**
- ▶ Analgesics: increased risk of bleeding when clopidogrel given with **NSAIDS** or **ASPIRIN**
  - Antibacterials: antiplatelet effect of clopidogrel possibly reduced by ● **CHLORAMPHENICOL**, ● **CIPROFLOXACIN** and ● **ERYTHROMYCIN**
  - Anticoagulants: manufacturer of clopidogrel advises avoid concomitant use with ● **WARFARIN**; antiplatelet action of clopidogrel enhances anticoagulant effect of ● **COUMARINS** and ● **PHENINDIONE**; increased risk of bleeding when clopidogrel given with **HEPARIN**
  - Antidepressants: antiplatelet effect of clopidogrel possibly reduced by ● **FLUOXETINE**, ● **FLUVOXAMINE** and ● **MOCLOBEMIDE**
  - Antiepileptics: antiplatelet effect of clopidogrel possibly reduced by ● **CARBAMAZEPINE** and ● **OXCARBAZEPINE**
  - ▶ Antifungals: antiplatelet effect of clopidogrel possibly reduced by ● **FLUCONAZOLE**, ● **ITRACONAZOLE**, ● **KETOCONAZOLE** and ● **VORICONAZOLE**



**Clopidogrel** (continued)

- Antivirals: antiplatelet effect of clopidogrel possibly reduced by ● **ETRAVIRINE**
- ▷ Dipyridamole: increased risk of bleeding when clopidogrel given with **DIPYRIDAMOLE**
- ▷ Iloprost: increased risk of bleeding when clopidogrel given with **ILOPROST**
- Lipid-regulating Drugs: clopidogrel increases plasma concentration of ● **ROSUVASTATIN**—adjust dose of rosuvastatin (consult product literature)
- ▷ Prasugrel: possible increased risk of bleeding when clopidogrel given with **PRASUGREL**
- Ulcer-healing Drugs: antiplatelet effect of clopidogrel possibly reduced by ● **CIMETIDINE**, **LANSOPRAZOLE**, **PANTOPRAZOLE** and **RABEPRAZOLE**; antiplatelet effect of clopidogrel reduced by ● **ESOMEPRAZOLE** and ● **OMEPRAZOLE**

**Clozapine** see Antipsychotics**Co-amoxiclav** see Penicillins**Co-beneldopa**

- ▷ ACE Inhibitors: enhanced hypotensive effect when co-beneldopa given with **ACE INHIBITORS**
- ▷ Adrenergic Neurone Blockers: enhanced hypotensive effect when co-beneldopa given with **ADRENERGIC NEURONE BLOCKERS**
- ▷ Alpha-blockers: enhanced hypotensive effect when co-beneldopa given with **ALPHA-BLOCKERS**
- Anaesthetics, General: increased risk of arrhythmias when co-beneldopa given with ● **VOLATILE LIQUID GENERAL ANAESTHETICS**
- ▷ Angiotensin-II Receptor Antagonists: enhanced hypotensive effect when co-beneldopa given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- ▷ Antibacterials: effects of co-beneldopa possibly reduced by **ISONIAZID**
- Antidepressants: risk of hypertensive crisis when co-beneldopa given with ● **MAOIS**, avoid co-beneldopa for at least 2 weeks after stopping MAOIs; increased risk of side-effects when co-beneldopa given with **MOCLOBEMIDE**
- ▷ Antiepileptics: effects of co-beneldopa possibly reduced by **FOSPHENYTOIN** and **PHENYTOIN**
- ▷ Antimuscarinics: absorption of co-beneldopa possibly reduced by **ANTIMUSCARINICS**
- ▷ Antipsychotics: effects of co-beneldopa antagonised by **ANTIPSYCHOTICS**; avoidance of co-beneldopa advised by manufacturer of **AMISULPRIDE** (antagonism of effect)
- ▷ Anxiolytics and Hypnotics: effects of co-beneldopa possibly antagonised by **BENZODIAZEPINES**
- ▷ Beta-blockers: enhanced hypotensive effect when co-beneldopa given with **BETA-BLOCKERS**
- ▷ Bupropion: increased risk of side-effects when co-beneldopa given with **BUPROPION**
- ▷ Calcium-channel Blockers: enhanced hypotensive effect when co-beneldopa given with **CALCIUM-CHANNEL BLOCKERS**
- ▷ Clonidine: enhanced hypotensive effect when co-beneldopa given with **CLONIDINE**
- ▷ Diazoxide: enhanced hypotensive effect when co-beneldopa given with **DIAZOXIDE**
- ▷ Diuretics: enhanced hypotensive effect when co-beneldopa given with **DIURETICS**
- ▷ Dopaminergics: enhanced effects and increased toxicity of co-beneldopa when given with **SELEGILINE** (reduce dose of co-beneldopa)
- ▷ Iron Salts: absorption of co-beneldopa possibly reduced by oral **IRON SALTS**
- ▷ Memantine: effects of dopaminergics possibly enhanced by **MEMANTINE**
- ▷ Methyldopa: enhanced hypotensive effect when co-beneldopa given with **METHYLDOPA**; antiparkinsonian effect of dopaminergics antagonised by **METHYLDOPA**
- ▷ Moxonidine: enhanced hypotensive effect when co-beneldopa given with **MOXONIDINE**
- ▷ Muscle Relaxants: possible agitation, confusion and hallucinations when co-beneldopa given with **BACLOFEN**
- ▷ Nitrates: enhanced hypotensive effect when co-beneldopa given with **NITRATES**

**Co-beneldopa** (continued)

- ▷ Vasodilator Antihypertensives: enhanced hypotensive effect when co-beneldopa given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**
- Cobicistat**
- Alpha-blockers: cobicistat possibly increases plasma concentration of ● **ALFUZOSIN**—manufacturer of cobicistat advises avoid concomitant use
  - Anti-arrhythmics: cobicistat possibly increases plasma concentration of ● **AMIODARONE**—manufacturer of cobicistat advises avoid concomitant use
  - Antibacterials: plasma concentration of cobicistat reduced by ● **RIFABUTIN** (adjust dose—consult product literature); plasma concentration of cobicistat possibly reduced by ● **RIFAMPICIN**—manufacturer of cobicistat advises avoid concomitant use
  - Anticoagulants: avoidance of cobicistat advised by manufacturer of **APIXABAN**; cobicistat possibly enhances anticoagulant effect of ● **RIVAROXABAN**—avoid concomitant use
  - Antidepressants: plasma concentration of cobicistat possibly reduced by ● **ST JOHN'S WORT**—manufacturer of cobicistat advises avoid concomitant use
  - Antiepileptics: plasma concentration of cobicistat possibly reduced by ● **CARBAMAZEPINE**, ● **FOSPHENYTOIN**, ● **PHENOBARBITAL**, ● **PHENYTOIN** and ● **PRIMIDONE**—manufacturer of cobicistat advises avoid concomitant use
  - ▷ Antifungals: cobicistat possibly increases plasma concentration of **ITRACONAZOLE** and **KETOCONAZOLE**—manufacturer of cobicistat advises reduce dose of itraconazole and ketoconazole
  - Antipsychotics: cobicistat possibly increases plasma concentration of ● **LURASIDONE**—avoid concomitant use; cobicistat possibly increases plasma concentration of ● **PIMOZIDE**—manufacturer of cobicistat advises avoid concomitant use
  - Antivirals: manufacturer of cobicistat advises avoid concomitant use with **BOCEPREVIR**; cobicistat possibly increases the plasma concentration of ● **DACLATASVIR**—reduce dose of daclatasvir (see under Daclatasvir, p. 544); cobicistat possibly increases plasma concentration of ● **MARAVIROC** (reduce dose of maraviroc); avoidance of cobicistat advised by manufacturer of **NEVIRAPINE**; cobicistat possibly increases plasma concentration of ● **SIMEPREVIR**—manufacturer of simeprevir advises avoid concomitant use; plasma concentration of both drugs reduced when cobicistat given with ● **TIPRANAVIR** (avoid concomitant use)
  - Anxiolytics and Hypnotics: manufacturer of cobicistat advises avoid concomitant use with oral ● **MIDAZOLAM**
  - ▷ Bosentan: manufacturer of cobicistat advises avoid concomitant use with **BOSENTAN**
  - ▷ Cardiac Glycosides: cobicistat possibly increases plasma concentration of **DIGOXIN**—reduce initial dose of digoxin
  - Cytotoxics: cobicistat possibly increases the plasma concentration of ● **IBRUTINIB**—reduce dose of ibrutinib (see under Ibrutinib, p. 809)
  - Domperidone: possible increased risk of ventricular arrhythmias when cobicistat given with ● **DOMPERIDONE**—avoid concomitant use
  - Ergot Alkaloids: cobicistat possibly increases plasma concentration of ● **ERGOT ALKALOIDS**—manufacturer of cobicistat advises avoid concomitant use
  - Lipid-regulating Drugs: cobicistat possibly increases plasma concentration of **ATORVASTATIN**—manufacturer of cobicistat advises reduce dose of atorvastatin; manufacturer of cobicistat advises avoid concomitant use with ● **SIMVASTATIN**
  - Oestrogens: cobicistat accelerates metabolism of ● **OESTROGENS** (reduced contraceptive effect with combined oral contraceptives, contraceptive patches, and vaginal rings—see Contraceptive Interactions in BNF)
  - ▷ Progestogens: cobicistat increases plasma concentration of **NORGESTIMATE**
  - Sildenafil: cobicistat possibly increases plasma concentration of ● **SILDENAFIL**—manufacturer of cobicistat advises avoid concomitant use of sildenafil for pulmonary arterial

**Cobicistat**

- **Sildenafil** (continued)  
hypertension or reduce dose of sildenafil for erectile dysfunction—consult cobicistat product literature
- ▶ **Sympathomimetics**, **Beta<sub>2</sub>**: manufacturer of cobicistat advises avoid concomitant use with **SALMETEROL**
- **Tadalafil**: cobicistat possibly increases plasma concentration of ● **TADALAFIL**—manufacturer of cobicistat advises reduce dose of tadalafil (consult cobicistat product literature)
- **Vardenafil**: cobicistat possibly increases plasma concentration of ● **VARDENAFIL**—manufacturer of cobicistat advises reduce dose of vardenafil (consult cobicistat product literature)

**Co-careldopa**

- ▶ **ACE Inhibitors**: enhanced hypotensive effect when co-careldopa given with **ACE INHIBITORS**
- ▶ **Adrenergic Neurone Blockers**: enhanced hypotensive effect when co-careldopa given with **ADRENERGIC NEURONE BLOCKERS**
- ▶ **Alpha-blockers**: enhanced hypotensive effect when co-careldopa given with **ALPHA-BLOCKERS**
- **Anaesthetics**, **General**: increased risk of arrhythmias when co-careldopa given with ● **VOLATILE LIQUID GENERAL ANAESTHETICS**
- ▶ **Angiotensin-II Receptor Antagonists**: enhanced hypotensive effect when co-careldopa given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- ▶ **Antibacterials**: effects of co-careldopa possibly reduced by **ISONIAZID**
- **Antidepressants**: risk of hypertensive crisis when co-careldopa given with ● **MAOIs**, avoid co-careldopa for at least 2 weeks after stopping MAOIs; increased risk of side-effects when co-careldopa given with **MOCLOBEMIDE**
- ▶ **Antiepileptics**: effects of co-careldopa possibly reduced by **FOSPHENYTOIN** and **PHENYTOIN**
- ▶ **Antimuscarinics**: absorption of co-careldopa possibly reduced by **ANTIMUSCARINICS**
- ▶ **Antipsychotics**: effects of co-careldopa antagonised by **ANTIPSYCHOTICS**; avoidance of co-careldopa advised by manufacturer of **AMISULPRIDE** (antagonism of effect)
- ▶ **Anxiolytics and Hypnotics**: effects of co-careldopa possibly antagonised by **BENZODIAZEPINES**
- ▶ **Beta-blockers**: enhanced hypotensive effect when co-careldopa given with **BETA-BLOCKERS**
- ▶ **Bupropion**: increased risk of side-effects when co-careldopa given with **BUPROPION**
- ▶ **Calcium-channel Blockers**: enhanced hypotensive effect when co-careldopa given with **CALCIUM-CHANNEL BLOCKERS**
- ▶ **Clonidine**: enhanced hypotensive effect when co-careldopa given with **CLONIDINE**
- ▶ **Diazoxide**: enhanced hypotensive effect when co-careldopa given with **DIAZOXIDE**
- ▶ **Diuretics**: enhanced hypotensive effect when co-careldopa given with **DIURETICS**
- ▶ **Dopaminergics**: enhanced effects and increased toxicity of co-careldopa when given with **SELEGILINE** (reduce dose of co-careldopa)
- ▶ **Iron Salts**: absorption of co-careldopa possibly reduced by **oral IRON SALTS**
- ▶ **Memantine**: effects of dopaminergics possibly enhanced by **MEMANTINE**
- ▶ **Methylidopa**: enhanced hypotensive effect when co-careldopa given with **METHYLDOPA**; antiparkinsonian effect of dopaminergics antagonised by **METHYLDOPA**
- ▶ **Moxonidine**: enhanced hypotensive effect when co-careldopa given with **MOXONIDINE**
- ▶ **Muscle Relaxants**: possible agitation, confusion and hallucinations when co-careldopa given with **BACLOFEN**
- ▶ **Nitrates**: enhanced hypotensive effect when co-careldopa given with **NITRATES**
- ▶ **Vasodilator Antihypertensives**: enhanced hypotensive effect when co-careldopa given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**

**Codeine** see Opioid Analgesics

**Co-fluampicil** see Penicillins

**Colchicine**

- **Anti-arrhythmics**: possible increased risk of colchicine toxicity when given with ● **AMIODARONE**

**Colchicine** (continued)

- **Antibacterials**: possible increased risk of colchicine toxicity when given with ● **AZITHROMYCIN**, ● **CLARITHROMYCIN**, ● **ERYTHROMYCIN** and ● **TELITHROMYCIN**—suspend or reduce dose of colchicine (avoid concomitant use in hepatic or renal impairment)
- **Antifungals**: possible increased risk of colchicine toxicity when given with ● **ITRACONAZOLE** and ● **KETOCONAZOLE**—suspend or reduce dose of colchicine (avoid concomitant use in hepatic or renal impairment)
- **Antivirals**: possible increased risk of colchicine toxicity when given with ● **ATAZANAVIR**, ● **INDINAVIR**, ● **RITONAVIR** and ● **TELAPREVIR**—suspend or reduce dose of colchicine (avoid concomitant use in hepatic or renal impairment)
- **Calcium-channel Blockers**: possible increased risk of colchicine toxicity when given with ● **DILTIAZEM** and ● **VERAPAMIL**—suspend or reduce dose of colchicine (avoid concomitant use in hepatic or renal impairment)
- **Cardiac Glycosides**: possible increased risk of myopathy when colchicine given with ● **DIGOXIN**
- **Cyclosporin**: possible increased risk of nephrotoxicity and myotoxicity when colchicine given with ● **CYCLOSPORIN**—suspend or reduce dose of colchicine (avoid concomitant use in hepatic or renal impairment)
- **Grapefruit Juice**: possible increased risk of colchicine toxicity when given with ● **GRAPEFRUIT JUICE**
- **Lipid-regulating Drugs**: possible increased risk of myopathy when colchicine given with ● **FIBRATES** or ● **STATINS**

**Colecalciferol** see Vitamins

**Colesevelam**

**NOTE** Other drugs should be taken at least 4 hours before or after colestevlam to reduce possible interference with absorption

- ▶ **Antidiabetics**: colestevlam reduces absorption of **GLIBENCLAMIDE** and **GLIPIZIDE**; colestevlam reduces absorption of **GLIMEPIRIDE**—manufacturer of glimepiride advises give at least 4 hours before colestevlam; manufacturer of canagliflozin advises give bile acid sequestrants at least 1 hour after or 4–6 before **CANAGLIFLOZIN**
- ▶ **Antiepileptics**: colestevlam possibly reduces absorption of **FOSPHENYTOIN** and **PHENYTOIN**
- **Cyclosporin**: colestevlam reduces absorption of ● **CYCLOSPORIN**
- ▶ **Lipid-regulating Drugs**: bile acid sequestrants possibly reduce absorption of **LOMITAPIDE** (give at least 4 hours apart)
- ▶ **Oestrogens**: colestevlam reduces absorption of **ETHINYLESTRADIOL**
- ▶ **Thyroid Hormones**: colestevlam reduces absorption of **LEVOTHYROXINE**

**Colestilan**

**NOTE** Other drugs should be taken at least 1 hour before or 3 hours after colestilan to reduce possible interference with absorption

- ▶ **Cyclosporin**: manufacturer of colestilan advises give **CYCLOSPORIN** at least 1 hour before or 3 hours after colestilan
- ▶ **Mycophenolate**: manufacturer of colestilan advises give **MYCOPHENOLATE** at least 1 hour before or 3 hours after colestilan
- ▶ **Tacrolimus**: manufacturer of colestilan advises give **TACROLIMUS** at least 1 hour before or 3 hours after colestilan
- ▶ **Thyroid Hormones**: manufacturer of colestilan advises give **LEVOTHYROXINE** at least 1 hour before or 3 hours after colestilan

**Colestipol**

**NOTE** Other drugs should be taken at least 1 hour before or 4–6 hours after colestipol to reduce possible interference with absorption

- ▶ **Antibacterials**: colestipol possibly reduces absorption of **TETRACYCLINE**
- ▶ **Antidiabetics**: manufacturer of canagliflozin advises give bile acid sequestrants at least 1 hour after or 4–6 before **CANAGLIFLOZIN**
- ▶ **Bile Acids**: colestipol possibly reduces absorption of **BILE ACIDS**
- ▶ **Cardiac Glycosides**: colestipol possibly reduces absorption of **CARDIAC GLYCOSIDES**
- ▶ **Diuretics**: colestipol reduces absorption of **THIAZIDES AND RELATED DIURETICS** (give at least 2 hours apart)

**Colestipol** (continued)

- ▶ Lipid-regulating Drugs: bile acid sequestrants possibly reduce absorption of **LOMITAPIDE** (give at least 4 hours apart)
- ▶ Thyroid Hormones: colestipol reduces absorption of **THYROID HORMONES**

**Colestyramine**

**NOTE** Other drugs should be taken at least 1 hour before or 4–6 hours after colestyramine to reduce possible interference with absorption

- ▶ Analgesics: colestyramine increases the excretion of **MELOXICAM**; colestyramine reduces absorption of **PARACETAMOL**
- ▶ Antibacterials: colestyramine possibly reduces absorption of **TETRACYCLINE**; colestyramine antagonises effects of **oral VANCOMYCIN**
- Anticoagulants: colestyramine may enhance or reduce anticoagulant effect of ● **COUMARINS** and ● **PHENINDIONE**
- ▶ Antidiabetics: colestyramine possibly enhances hypoglycaemic effect of **ACARBOSE**; manufacturer of canagliflozin advises give bile acid sequestrants at least 1 hour after or 4–6 before **CANAGLIFLOZIN**
- ▶ Antiepileptics: colestyramine possibly reduces absorption of **SODIUM VALPROATE** and **VALPROIC ACID**
- ▶ Bile Acids: colestyramine possibly reduces absorption of **BILE ACIDS**
- ▶ Cardiac Glycosides: colestyramine possibly reduces absorption of **CARDIAC GLYCOSIDES**
- ▶ Diuretics: colestyramine reduces absorption of **THIAZIDES AND RELATED DIURETICS** (give at least 2 hours apart)
- ▶ Leflunomide: colestyramine significantly decreases effect of **LEFLUNOMIDE** (enhanced elimination)—avoid unless drug elimination desired
- ▶ Lipid-regulating Drugs: bile acid sequestrants possibly reduce absorption of **LOMITAPIDE** (give at least 4 hours apart)
- ▶ Mycophenolate: colestyramine reduces absorption of **MYCOPHENOLATE**
- ▶ Raloxifene: colestyramine reduces absorption of **RALOXIFENE** (manufacturer of raloxifene advises avoid concomitant administration)
- ▶ Teriflunomide: colestyramine significantly decreases effect of **TERIFLUNOMIDE** (enhanced elimination)—avoid unless drug elimination desired
- ▶ Thyroid Hormones: colestyramine reduces absorption of **THYROID HORMONES**
- ▶ Vitamins: colestyramine possibly reduces absorption of **CALCITRIOL** (give at least 1 hour before or 4 to 6 hours after colestyramine)

**Colistimethate Sodium** see Polymyxins

**Contraceptives, oral** see Oestrogens and Progestogens

**Corticosteroids**

**NOTE** Interactions do not generally apply to corticosteroids used for topical action (including inhalation) unless specified

- ▶ ACE Inhibitors: corticosteroids antagonise hypotensive effect of **ACE INHIBITORS**
- ▶ Adrenergic Neurone Blockers: corticosteroids antagonise hypotensive effect of **ADRENERGIC NEURONE BLOCKERS**
- Aldesleukin: avoidance of corticosteroids advised by manufacturer of ● **ALDESLEUKIN**
- ▶ Alpha-blockers: corticosteroids antagonise hypotensive effect of **ALPHA-BLOCKERS**
- ▶ Aminophylline: increased risk of hypokalaemia when corticosteroids given with **AMINOPHYLLINE**
- ▶ Analgesics: increased risk of gastro-intestinal bleeding and ulceration when corticosteroids given with **NSAIDS**; increased risk of gastro-intestinal bleeding and ulceration when corticosteroids given with **ASPIRIN**, also corticosteroids reduce plasma concentration of salicylate
- ▶ Angiotensin-II Receptor Antagonists: corticosteroids antagonise hypotensive effect of **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- ▶ Antacids: absorption of deflazacort reduced by **ANTACIDS**
- ▶ Anesthetics: dexamethasone increases plasma concentration of active metabolite of **ALBENDAZOLE**; continuous use of dexamethasone possibly reduces plasma concentration of **PRAZQUANTEL**
- Antibacterials: plasma concentration of methylprednisolone possibly increased by **CLARITHROMYCIN**; metabolism of

**Corticosteroids**

● Antibacterials (continued)

- corticosteroids possibly inhibited by **ERYTHROMYCIN**; metabolism of methylprednisolone inhibited by **ERYTHROMYCIN**; corticosteroids possibly reduce plasma concentration of **ISONIAZID**; metabolism of corticosteroids accelerated by ● **RIFAMYCINS** (reduced effect)
- Anticoagulants: corticosteroids may enhance or reduce anticoagulant effect of ● **COUMARINS** (high-dose corticosteroids enhance anticoagulant effect); corticosteroids may enhance or reduce anticoagulant effect of **PHENINDIONE**
- ▶ Antidiabetics: corticosteroids antagonise hypoglycaemic effect of **ANTI-DIABETICS**
- Antiepileptics: metabolism of corticosteroids accelerated by ● **CARBAMAZEPINE**, ● **FOSPHENYTOIN**, ● **PHENOBARBITAL**, ● **PHENYTOIN** and ● **PRIMIDONE** (reduced effect)
- Antifungals: metabolism of corticosteroids possibly inhibited by **ITRACONAZOLE** and **KETOCONAZOLE**; plasma concentration of active metabolite of ciclolesonol increased by ● **KETOCONAZOLE**; plasma concentration of *inhaled* mometasone increased by **KETOCONAZOLE**; plasma concentration of *inhaled* and *oral* (and possibly also *intranasal* and *rectal*) budesonide increased by ● **ITRACONAZOLE** and ● **KETOCONAZOLE**; *inhaled* fluticasone plasma concentration is possibly increased by **KETOCONAZOLE**; metabolism of methylprednisolone inhibited by **KETOCONAZOLE**; increased risk of hypokalaemia when corticosteroids given with ● **AMPHOTERICIN**—avoid concomitant use unless corticosteroids needed to control reactions; plasma concentration of *inhaled* fluticasone increased by **ITRACONAZOLE**; metabolism of methylprednisolone possibly inhibited by **ITRACONAZOLE**; dexamethasone possibly reduces plasma concentration of **CASPOFUNGIN**—consider increasing dose of caspofungin
- Antivirals: dexamethasone possibly reduces plasma concentration of **DACLATASVIR** and **SIMEPREVIR**—manufacturer of daclatasvir and simeprevir advises avoid concomitant use; dexamethasone possibly reduces plasma concentration of **INDINAVIR**, **LOPINAVIR**, **SAQUINAVIR** and **TELAPREVIR**; avoidance of dexamethasone (except when given as a single dose) advised by manufacturer of ● **RILPIVIRINE**; plasma concentration of *inhaled* and *intranasal* fluticasone increased by ● **RITONAVIR**—increased risk of adrenal suppression; plasma concentration of budesonide (including *inhaled*, *intranasal*, and *rectal* budesonide) possibly increased by ● **RITONAVIR**—increased risk of adrenal suppression; plasma concentration of corticosteroids possibly increased by ● **RITONAVIR**—increased risk of adrenal suppression; plasma concentration of *inhaled* and *intranasal* budesonide and fluticasone possibly increased by **TELAPREVIR**
- ▶ Aprepitant: metabolism of dexamethasone and methylprednisolone inhibited by **APREPITANT** (reduce dose of dexamethasone and methylprednisolone)
- ▶ Beta-blockers: corticosteroids antagonise hypotensive effect of **BETA-BLOCKERS**
- ▶ Calcium Salts: corticosteroids reduce absorption of **CALCIUM SALTS**
- ▶ Calcium-channel Blockers: corticosteroids antagonise hypotensive effect of **CALCIUM-CHANNEL BLOCKERS**; plasma concentration of methylprednisolone increased by **DILTIAZEM**
- ▶ Cardiac Glycosides: increased risk of hypokalaemia when corticosteroids given with **CARDIAC GLYCOSIDES**
- Ciclosporin: high-dose methylprednisolone increases plasma concentration of ● **CICLOSPORIN** (risk of convulsions); plasma concentration of prednisolone increased by **CICLOSPORIN**
- ▶ Clonidine: corticosteroids antagonise hypotensive effect of **CLONIDINE**
- ▶ Cytotoxics: possible increased risk of hepatotoxicity when dexamethasone given with *high-dose METHOTREXATE*; dexamethasone possibly decreases plasma concentration of **AXITINIB** (increase dose of axitinib—consult axitinib product literature); dexamethasone possibly reduces plasma concentration of **CABOZANTINIB**—manufacturer of cabozantinib advises avoid concomitant use
- ▶ Diazoxide: corticosteroids antagonise hypotensive effect of **DIAZOXIDE**

**Corticosteroids** (continued)

- ▶ Diuretics: corticosteroids antagonise diuretic effect of **DIURETICS**; increased risk of hypokalaemia when corticosteroids given with **ACETAZOLAMIDE**, **LOOP DIURETICS** or **THIAZIDES AND RELATED DIURETICS**
- ▶ Fosaprepitant: metabolism of dexamethasone and methylprednisolone inhibited by **FOSAPREPITANT** (reduce dose of dexamethasone and methylprednisolone)
- Grapefruit Juice: plasma concentration of *oral* budesonide increased by ● **GRAPEFRUIT JUICE**—avoid concurrent use or separate administration by as much as possible and consider reducing *oral* budesonide dose
- ▶ Histamine: avoidance of corticosteroids advised by manufacturer of **HISTAMINE**
- ▶ Methyldopa: corticosteroids antagonise hypotensive effect of **METHYLDOPA**
- ▶ Mifamurtide: avoidance of corticosteroids advised by manufacturer of **MIFAMURTIDE**
- ▶ Mifepristone: effect of corticosteroids (including *inhaled* corticosteroids) may be reduced for 3–4 days after **MIFEPRISTONE**
- ▶ Moxonidine: corticosteroids antagonise hypotensive effect of **MOXONIDINE**
- ▶ Muscle Relaxants: corticosteroids possibly antagonise effects of **PANCURONIUM** and **VECURONIUM**
- ▶ Nitrates: corticosteroids antagonise hypotensive effect of **NITRATES**
- ▶ Oestrogens: plasma concentration of corticosteroids increased by oral contraceptives containing **OESTROGENS**
- ▶ Sodium Benzoate: corticosteroids possibly reduce effects of **SODIUM BENZOATE**
- ▶ Sodium Phenylbutyrate: corticosteroids possibly reduce effects of **SODIUM PHENYLBUTYRATE**
- ▶ Somatropin: corticosteroids may inhibit growth-promoting effect of **SOMATROPIN**
- ▶ Sympathomimetics: metabolism of dexamethasone accelerated by **EPHEDRINE**
- ▶ Sympathomimetics, Beta<sub>2</sub>: increased risk of hypokalaemia when corticosteroids given with high doses of **BETA<sub>2</sub> SYMPATHOMIMETICS**
- ▶ Theophylline: increased risk of hypokalaemia when corticosteroids given with **THEOPHYLLINE**
- Vaccines: high doses of corticosteroids impair immune response to ● **VACCINES**—avoid concomitant use with live vaccines
- ▶ Vasodilator Antihypertensives: corticosteroids antagonise hypotensive effect of **HYDRALAZINE**, **MINOXIDIL** and **SODIUM NITROPRUSSIDE**

**Co-trimoxazole** see Trimethoprim and Sulfamethoxazole  
**Coumarins**

**NOTE** Change in patient's clinical condition, particularly associated with liver disease, intercurrent illness, or drug administration, necessitates more frequent testing. Major changes in diet (especially involving salads and vegetables) and in alcohol consumption may also affect anticoagulant control

- Alcohol: anticoagulant control with coumarins may be affected by major changes in consumption of ● **ALCOHOL**
- ▶ Allopurinol: anticoagulant effect of coumarins possibly enhanced by **ALLOPURINOL**
- Anabolic Steroids: anticoagulant effect of coumarins enhanced by ● **ANABOLIC STEROIDS**
- Analgesics: anticoagulant effect of coumarins possibly enhanced by ● **NSAIDS**; increased risk of haemorrhage when anticoagulants given with *intravenous* ● **DICLOFENAC** (avoid concomitant use, including low-dose heparins); increased risk of haemorrhage when anticoagulants given with ● **KETOROLAC** (avoid concomitant use, including low-dose heparins); anticoagulant effect of coumarins enhanced by ● **TRAMADOL**; increased risk of bleeding when coumarins given with ● **ASPIRIN** (due to antiplatelet effect); anticoagulant effect of coumarins possibly enhanced by prolonged regular use of **PARACETAMOL**
- Anthelmintics: anticoagulant effect of coumarins possibly enhanced by **IVERMECTIN**; anticoagulant effect of warfarin possibly enhanced by ● **LEVAMISOLE**

**Coumarins** (continued)

- Anti-arrhythmics: metabolism of coumarins inhibited by ● **AMIODARONE** (enhanced anticoagulant effect); anticoagulant effect of warfarin may be enhanced or reduced by **DISOPYRAMIDE**; anticoagulant effect of coumarins possibly enhanced by ● **DRONEDARONE**; anticoagulant effect of coumarins enhanced by ● **PROPAFENONE**
- Antibacterials: experience in anticoagulant clinics suggests that INR possibly altered when coumarins are given with ● **NEOMYCIN** (given for local action on gut); anticoagulant effect of coumarins possibly enhanced by ● **AZITHROMYCIN**, ● **AZTREONAM**, ● **CEPHALOSPORINS**, **CIPROFLOXACIN**, **LEVOFLOXACIN**, ● **TETRACYCLINES**, **TIGECYCLINE** and **TRIMETHOPRIM**; anticoagulant effect of coumarins enhanced by ● **CHLORAMPHENICOL**, ● **CLARITHROMYCIN**, ● **ERYTHROMYCIN**, ● **METRONIDAZOLE**, ● **NALIDIXIC ACID**, ● **NORFLOXACIN**, ● **OFLOXACIN** and ● **SULFONAMIDES**; plasma concentration of warfarin possibly increased by **ORITAVANCIN**; an interaction between coumarins and broad-spectrum **PENICILLINS** has not been demonstrated in studies, but common experience in anticoagulant clinics is that INR can be altered; metabolism of coumarins accelerated by ● **RIFAMYCINS** (reduced anticoagulant effect)
- Anticoagulants: increased risk of haemorrhage when other anticoagulants given with ● **APIXABAN**, ● **DABIGATRAN** and ● **RIVAROXABAN** (avoid concomitant use except when switching with other anticoagulants or using heparin to maintain catheter patency)
- Antidepressants: anticoagulant effect of warfarin possibly enhanced by ● **VENLAFAXINE**; anticoagulant effect of warfarin may be enhanced or reduced by **TRAZODONE**; anticoagulant effect of coumarins possibly enhanced by ● **SSRIS**; anticoagulant effect of coumarins reduced by ● **ST JOHN'S WORT** (avoid concomitant use); anticoagulant effect of warfarin enhanced by **MIRTAZAPINE**; anticoagulant effect of coumarins may be enhanced or reduced by ● **TRICYCLICS**
- Antidiabetics: anticoagulant effect of warfarin possibly enhanced by **EXENATIDE**; coumarins possibly enhance hypoglycaemic effect of ● **SULFONYLUREAS**, also possible changes to anticoagulant effect
- Antiepileptics: metabolism of coumarins accelerated by ● **CARBAMAZEPINE**, ● **PHENOBARBITAL** and ● **PRIMIDONE** (reduced anticoagulant effect); plasma concentration of warfarin reduced by **ESLICARBAMAZEPINE**; metabolism of coumarins accelerated by ● **FOSPHENYTOIN** and ● **PHENYTOIN** (possibility of reduced anticoagulant effect, but enhancement also reported); anticoagulant effect of coumarins possibly enhanced by **SODIUM VALPROATE** and **VALPROIC ACID**
- Antifungals: anticoagulant effect of coumarins enhanced by ● **FLUCONAZOLE**, ● **ITRACONAZOLE**, ● **KETOCONAZOLE** and ● **VORICONAZOLE**; anticoagulant effect of coumarins enhanced by ● **MICONAZOLE** (miconazole oral gel and possibly vaginal and topical formulations absorbed); anticoagulant effect of coumarins reduced by ● **GRISEOFULVIN**
- ▶ Antimalarials: isolated reports that anticoagulant effect of warfarin may be enhanced by **PROGUANIL**; plasma concentration of both drugs increased when warfarin given with **QUININE**
- Antivirals: anticoagulant effect of warfarin may be enhanced or reduced by **ATAZANAVIR**, ● **NEVIRAPINE** and ● **RITONAVIR**; plasma concentration of coumarins possibly affected by ● **EFAVIRENZ**; anticoagulant effect of coumarins may be enhanced or reduced by **FOSAMPRENAVIR**; anticoagulant effect of coumarins possibly enhanced by ● **RITONAVIR**; anticoagulant effect of warfarin possibly enhanced by **SAQUINAVIR**; plasma concentration of warfarin possibly affected by ● **TELAPREVIR**
- ▶ Anxiolytics and Hypnotics: anticoagulant effect of coumarins may transiently be enhanced by **CHLORAL**
- ▶ Aprepitant: anticoagulant effect of warfarin possibly reduced by **APREPITANT**
- Azathioprine: anticoagulant effect of coumarins possibly reduced by ● **AZATHIOPRINE**
- ▶ Bosentan: monitoring anticoagulant effect of coumarins recommended by manufacturer of **BOSENTAN**



**Coumarins** (continued)

- Clopidogrel: anticoagulant effect of coumarins enhanced due to antiplatelet action of ● **CLOPIDOGREL**; avoidance of warfarin advised by manufacturer of ● **CLOPIDOGREL**
- Corticosteroids: anticoagulant effect of coumarins may be enhanced or reduced by ● **CORTICOSTEROIDS** (high-dose corticosteroids enhance anticoagulant effect)
- Cranberry Juice: anticoagulant effect of coumarins possibly enhanced by ● **CRANBERRY JUICE**—avoid concomitant use
- Cytotoxics: anticoagulant effect of coumarins possibly enhanced by ● **ETOPOSIDE**, ● **IFOSFAMIDE** and ● **SORAFENIB**; anticoagulant effect of coumarins enhanced by ● **CAPECITABINE**, ● **FLUOROURACIL** and ● **TEGAFUR**; anticoagulant effect of warfarin possibly enhanced by ● **GEFITINIB**, **GEMCITABINE** and ● **VEMURAFENIB**; anticoagulant effect of coumarins possibly reduced by ● **MERCAPTOPYRINE** and ● **MITOTANE**; plasma concentration of warfarin reduced by **DABRAFENIB**; increased risk of bleeding when coumarins given with ● **ERLOTINIB**; avoidance of coumarins advised by manufacturer of **IBRUTINIB**; replacement of warfarin with a heparin advised by manufacturer of **IMATINIB** (possibility of enhanced warfarin effect); increased risk of bleeding when warfarin given with ● **REGORAFENIB**
- Dipyridamole: anticoagulant effect of coumarins enhanced due to antiplatelet action of ● **DIPYRIDAMOLE**
- Disulfiram: anticoagulant effect of coumarins enhanced by ● **DISULFIRAM**
- Dopaminergics: anticoagulant effect of warfarin enhanced by ● **ENTACAPONE**
- Enteral Foods: anticoagulant effect of coumarins antagonised by vitamin K (present in some ● **ENTERAL FEEDS**)
- Fosaprepitant: anticoagulant effect of warfarin possibly reduced by **FOSAPREPITANT**
- Glucosamine: anticoagulant effect of warfarin enhanced by ● **GLUCOSAMINE** (avoid concomitant use)
- Hormone Antagonists: anticoagulant effect of coumarins possibly enhanced by **BICALUTAMIDE** and ● **TOREMIFENE**; metabolism of coumarins inhibited by ● **DANAZOL** (enhanced anticoagulant effect); plasma concentration of coumarins possibly reduced by ● **ENZALUTAMIDE**; anticoagulant effect of coumarins enhanced by ● **FLUTAMIDE** and ● **TAMOXIFEN**
- Iloprost: anticoagulant effect of coumarins possibly enhanced by **ILOPROST**
- Lactulose: anticoagulant effect of coumarins possibly enhanced by **LACTULOSE**
- Leflunomide: anticoagulant effect of warfarin possibly enhanced by **LEFLUNOMIDE**
- Leukotriene Receptor Antagonists: anticoagulant effect of warfarin enhanced by **ZAFIRLUKAST**
- Levocarnitine: anticoagulant effect of coumarins possibly enhanced by **LEVOCARNITINE**
- Lipid-regulating Drugs: anticoagulant effect of coumarins may be enhanced or reduced by ● **COLESTYRAMINE**; anticoagulant effect of warfarin may be transiently reduced by **ATORVASTATIN**; anticoagulant effect of coumarins enhanced by ● **FIBRATES** and ● **FLUVASTATIN**; anticoagulant effect of coumarins possibly enhanced by **EZETIMIBE** and ● **ROSUVASTATIN**; anticoagulant effect of coumarins can be enhanced by **SIMVASTATIN**; anticoagulant effect of warfarin possibly enhanced by **LOMITAPIDE**
- Memantine: anticoagulant effect of warfarin possibly enhanced by **MEMANTINE**
- Oestrogens: anticoagulant effect of coumarins may be enhanced or reduced by **OESTROGENS**
- Orlistat: monitoring anticoagulant effect of coumarins recommended by manufacturer of **ORLISTAT**
- Prasugrel: possible increased risk of bleeding when coumarins given with **PRASUGREL**
- Progestogens: anticoagulant effect of coumarins may be enhanced or reduced by **PROGESTOGENS**
- Raloxifene: anticoagulant effect of coumarins antagonised by **RALOXIFENE**
- Retinoids: anticoagulant effect of coumarins possibly reduced by ● **ACITRETIN**
- Sulfipyrazone: anticoagulant effect of coumarins enhanced by ● **SULFINPYRAZONE**

**Coumarins** (continued)

- Sympathomimetics: anticoagulant effect of coumarins possibly enhanced by ● **METHYLPHENIDATE**
- Testolactone: anticoagulant effect of coumarins enhanced by ● **TESTOLACTONE**
- Testosterone: anticoagulant effect of coumarins enhanced by ● **TESTOSTERONE**
- Thyroid Hormones: anticoagulant effect of coumarins enhanced by ● **THYROID HORMONES**
- Ubidecarenone: anticoagulant effect of warfarin may be enhanced or reduced by **UBIDECARENONE**
- Ulcer-healing Drugs: metabolism of coumarins inhibited by ● **CIMETIDINE** (enhanced anticoagulant effect); anticoagulant effect of coumarins possibly enhanced by ● **ESOMEPRAZOLE** and ● **OMEPRAZOLE**; anticoagulant effect of coumarins might be enhanced by **PANTOPRAZOLE**; absorption of coumarins possibly reduced by ● **SUCRALFATE** (reduced anticoagulant effect)
- Vaccines: anticoagulant effect of warfarin possibly enhanced by **INFLUENZA VACCINE**
- Vitamins: anticoagulant effect of coumarins possibly enhanced by ● **VITAMIN E**; anticoagulant effect of coumarins antagonised by ● **VITAMIN K**

**Cranberry Juice**

- Anticoagulants: cranberry juice possibly enhances anticoagulant effect of ● **COUMARINS**—avoid concomitant use

**Crizotinib**

- Analgesics: manufacturer of crizotinib advises caution with ● **ALFENTANIL** and ● **FENTANYL**
- Antibacterials: plasma concentration of crizotinib possibly increased by ● **CLARITHROMYCIN** and ● **TELITHROMYCIN**—manufacturer of crizotinib advises avoid concomitant use; plasma concentration of crizotinib possibly reduced by **RIFABUTIN**—manufacturer of crizotinib advises avoid concomitant use; plasma concentration of crizotinib reduced by ● **RIFAMPICIN**—manufacturer of crizotinib advises avoid concomitant use
- Antidepressants: plasma concentration of crizotinib possibly reduced by **ST JOHN'S WORT**—manufacturer of crizotinib advises avoid concomitant use
- Antiepileptics: plasma concentration of crizotinib possibly reduced by **CARBAMAZEPINE**, **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**—manufacturer of crizotinib advises avoid concomitant use
- Antifungals: plasma concentration of crizotinib increased by ● **KETOCONAZOLE**—avoid concomitant use; plasma concentration of crizotinib possibly increased by ● **ITRACONAZOLE** and ● **VORICONAZOLE**—manufacturer of crizotinib advises avoid concomitant use
- Antimalarials: possible increased risk of bradycardia when crizotinib given with **MEFLOQUINE**
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis); manufacturer of crizotinib advises caution with ● **PIMOZIDE**
- Antivirals: plasma concentration of crizotinib possibly increased by ● **ATAZANAVIR**, ● **INDINAVIR**, ● **RITONAVIR** and ● **SAQUINAVIR**—manufacturer of crizotinib advises avoid concomitant use
- Anxiolytics and Hypnotics: crizotinib increases plasma concentration of ● **MIDAZOLAM**
- Beta-blockers: possible increased risk of bradycardia when crizotinib given with **BETA-BLOCKERS**
- Calcium-channel Blockers: possible increased risk of bradycardia when crizotinib given with **DILTIAZEM** or **VERAPAMIL**
- Cardiac Glycosides: possible increased risk of bradycardia when crizotinib given with **DIGOXIN**
- Ciclosporin: manufacturer of crizotinib advises caution with ● **CICLOSPORIN**
- Clonidine: possible increased risk of bradycardia when crizotinib given with **CLONIDINE**
- Cytotoxics: crizotinib possibly increases the plasma concentration of ● **IBRUTINIB**—reduce dose of ibrutinib (see under Ibrutinib, p. 809)
- Ergot Alkaloids: manufacturer of crizotinib advises caution with ● **ERGOT ALKALOIDS**

**Crizotinib** (continued)

- Grapefruit Juice: plasma concentration of crizotinib possibly increased by ● **GRAPEFRUIT JUICE**—manufacturer of crizotinib advises avoid concomitant use
- Oestrogens: manufacturer of crizotinib advises contraceptive effect of ● **OESTROGENS** possibly reduced
  - ▶ Parasympathomimetics: possible increased risk of bradycardia when crizotinib given with ● **PILOCARPINE**
- Progestogens: manufacturer of crizotinib advises contraceptive effect of ● **PROGESTOGENS** possibly reduced
- Sirolimus: manufacturer of crizotinib advises caution with ● **SIROLIMUS**
- Tacrolimus: manufacturer of crizotinib advises caution with ● **TACROLIMUS**

**Cyclizine** see Antihistamines**Cyclopenthiiazide** see Diuretics**Cyclopentolate** see Antimuscarinics**Cyclophosphamide**

- ▶ Antifungals: side-effects of cyclophosphamide possibly increased by ● **FLUCONAZOLE** and ● **ITRACONAZOLE**
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- ▶ Cardiac Glycosides: cyclophosphamide possibly reduces absorption of ● **DIGOXIN tablets**
- Cytotoxics: increased toxicity when high-dose cyclophosphamide given with ● **PENTOSTATIN**—avoid concomitant use
- ▶ Muscle Relaxants: cyclophosphamide enhances effects of ● **SUXAMETHONIUM**

**Cycloserine**

- Alcohol: increased risk of convulsions when cycloserine given with ● **ALCOHOL**
- ▶ Antibacterials: increased risk of CNS toxicity when cycloserine given with ● **ISONIAZID**
- ▶ Vaccines: antibacterials inactivate ● **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Cyproheptadine** see Antihistamines**Cytarabine**

- ▶ Antifungals: cytarabine possibly reduces plasma concentration of ● **FLUCYTOSINE**
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- ▶ Cardiac Glycosides: cytarabine possibly reduces absorption of ● **DIGOXIN tablets**
- ▶ Cytotoxics: intracellular concentration of cytarabine increased by ● **FLUDARABINE**

**Cytotoxics** see individual drugs**Dabigatran**

- Analgesics: possible increased risk of bleeding when dabigatran given with ● **NSAIDS**; increased risk of haemorrhage when anticoagulants given with *intravenous* ● **DICLOFENAC** (avoid concomitant use, including low-dose heparins); increased risk of haemorrhage when anticoagulants given with ● **KETOROLAC** (avoid concomitant use, including low-dose heparins)
- Anti-arrhythmics: plasma concentration of dabigatran increased by ● **AMIODARONE** (see under Dabigatran Etxilate, p. 117); plasma concentration of dabigatran increased by ● **DRONEDARONE**—avoid concomitant use
- Antibacterials: possible increased risk of bleeding when dabigatran given with ● **CLARITHROMYCIN**; plasma concentration of dabigatran reduced by ● **RIFAMPICIN**—manufacturer of dabigatran advises avoid concomitant use
- Anticoagulants: increased risk of haemorrhage when dabigatran given with other ● **ANTICOAGULANTS** (avoid concomitant use except when switching with other anticoagulants or using heparin to maintain catheter patency); increased risk of haemorrhage when other anticoagulants given with ● **APIXABAN** and ● **RIVAROXABAN** (avoid concomitant use except when switching with other anticoagulants or using heparin to maintain catheter patency)
- Antidepressants: possible increased risk of bleeding when dabigatran given with ● **SSRI-RELATED ANTIDEPRESSANTS** or ● **SSRIS**; plasma concentration of dabigatran possibly reduced

**Dabigatran**

- Antidepressants (continued)
  - by ● **ST JOHN'S WORT**—manufacturer of dabigatran advises avoid concomitant use
- ▶ Antiepileptics: plasma concentration of dabigatran possibly reduced by ● **CARBAMAZEPINE**, ● **FOSPHENYTOIN** and ● **PHENYTOIN**—manufacturer of dabigatran advises avoid concomitant use
- Antifungals: plasma concentration of dabigatran increased by ● **KETOCONAZOLE**—avoid concomitant use; manufacturer of dabigatran advises avoid concomitant use with ● **ITRACONAZOLE**
- ▶ Antivirals: plasma concentration of dabigatran possibly increased by ● **RILPIVIRINE** and ● **TELAPREVIR**
- Calcium-channel Blockers: plasma concentration of dabigatran possibly increased by ● **VERAPAMIL** (see under Dabigatran Etxilate, p. 117)
- Ciclosporin: plasma concentration of dabigatran possibly increased by ● **CICLOSPORIN**—manufacturer of dabigatran advises avoid concomitant use
- Sulfonpyrazole: possible increased risk of bleeding when dabigatran given with ● **SULFINPYRAZONE**
- Tacrolimus: plasma concentration of dabigatran possibly increased by ● **TACROLIMUS**—manufacturer of dabigatran advises avoid concomitant use
- Ticagrelor: plasma concentration of dabigatran increased by ● **TICAGRELO**
- ▶ Ulipristal: manufacturer of ulipristal advises give dabigatran at least 1.5 hours before or after ● **ULIPRISTAL**

**Dabrafenib**

- ▶ Antibacterials: manufacturer of dabrafenib advises avoid concomitant use with ● **RIFAMPICIN**
- ▶ Anticoagulants: dabrafenib reduces plasma concentration of ● **WARFARIN**
- ▶ Antidepressants: manufacturer of dabrafenib advises avoid concomitant use with ● **ST JOHN'S WORT**
- ▶ Antiepileptics: manufacturer of dabrafenib advises avoid concomitant use with ● **CARBAMAZEPINE**, ● **FOSPHENYTOIN**, ● **PHENOBARBITAL**, ● **PHENYTOIN** and ● **PRIMIDONE**
- ▶ Antifungals: plasma concentration of dabrafenib increased by ● **KETOCONAZOLE**
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- ▶ Lipid-regulating Drugs: plasma concentration of dabrafenib increased by ● **GEMFIBROZIL**
- Oestrogens: manufacturer of dabrafenib advises contraceptive effect of hormonal contraceptives containing ● **OESTROGENS** possibly reduced (alternative contraceptive recommended)
- Progestogens: manufacturer of dabrafenib advises contraceptive effect of hormonal contraceptives containing ● **PROGESTOGENS** possibly reduced (alternative contraceptive recommended)
- ▶ Ulcer-healing Drugs: manufacturer of dabrafenib advises avoid concomitant use with ● **PROTON PUMP INHIBITORS** (plasma concentration of dabrafenib possibly reduced)

**Dacarbazine**

- Aldesleukin: avoidance of dacarbazine advised by manufacturer of ● **ALDESLEUKIN**
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)

**Daclatasvir**

- Anti-arrhythmics: possible increased risk of bradycardia when daclatasvir (with sofosbuvir) given with ● **AMIODARONE**—see under Amiodarone, p. 88
- Antibacterials: plasma concentration of daclatasvir possibly increased by ● **CLARITHROMYCIN** and ● **TELITHROMYCIN**—reduce dose of daclatasvir (see under Daclatasvir, p. 544); plasma concentration of daclatasvir possibly reduced by ● **RIFABUTIN**—manufacturer of daclatasvir advises avoid concomitant use; plasma concentration of daclatasvir reduced by ● **RIFAMPICIN**—avoid concomitant use
- ▶ Antidepressants: plasma concentration of daclatasvir possibly reduced by ● **ST JOHN'S WORT**—manufacturer of daclatasvir advises avoid concomitant use
- Antiepileptics: plasma concentration of daclatasvir possibly reduced by ● **CARBAMAZEPINE**, ● **FOSPHENYTOIN**, ● **OXCARBAZEPINE**, ● **PHENOBARBITAL**, ● **PHENYTOIN** and

**Daclatasvir**

- Antiepileptics (continued)
  - **PRIMIDONE**—manufacturer of daclatasvir advises avoid concomitant use
- Antifungals: plasma concentration of daclatasvir increased by
  - **KETOCONAZOLE**—reduce dose of daclatasvir (see under Daclatasvir, p. 544); plasma concentration of daclatasvir possibly increased by • **ITRACONAZOLE**, • **POSACONAZOLE** and • **VORICONAZOLE**—reduce dose of daclatasvir (see under Daclatasvir, p. 544)
- Antivirals: plasma concentration of daclatasvir increased by
  - **ATAZANAVIR** and • **TELAPREVIR**—reduce dose of daclatasvir (see under Daclatasvir, p. 544); plasma concentration of daclatasvir possibly increased by • **BOCEPREVIR**—reduce dose of daclatasvir (see under Daclatasvir, p. 544); manufacturer of daclatasvir advises avoid concomitant use with **DARUNAVIR** and **LOPINAVIR** (plasma concentration of daclatasvir possibly increased); plasma concentration of daclatasvir reduced by • **EFAVIRENZ**—increase dose of daclatasvir (see under Daclatasvir, p. 544); manufacturer of daclatasvir advises avoid concomitant use with **ETRAVIRINE** and **NEVIRAPINE** (plasma concentration of daclatasvir possibly reduced)
- Cardiac Glycosides: daclatasvir increases plasma concentration of • **DIGOXIN**
- Cobicistat: plasma concentration of daclatasvir possibly increased by • **COBICISTAT**—reduce dose of daclatasvir (see under Daclatasvir, p. 544)
- Corticosteroids: plasma concentration of daclatasvir possibly reduced by **DEXAMETHASONE**—manufacturer of daclatasvir advises avoid concomitant use
- Lipid-regulating Drugs: daclatasvir increases plasma concentration of **ROSUVASTATIN**

**Dactinomycin**

- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)
- Vitamins: dactinomycin possibly reduces effects of
  - **ALFACALCIDOL**, **CALCITRIOL**, **COLECALCIFEROL**, **DIHYDROTACHYSTEROL**, **ERGOCALCIFEROL**, **PARICALCITOL** and **VITAMIN D**

**Dairy Products**

- Antibacterials: dairy products reduce absorption of **CIPROFLOXACIN** and **NORFLOXACIN**; dairy products reduce absorption of **TETRACYCLINES** (except doxycycline and minocycline)
- Cytotoxics: dairy products possibly reduce plasma concentration of **MERCAPTOPYRINE**—manufacturer of mercaptopurine advises give at least 1 hour before or 2 hours after dairy products
- Eltrombopag: dairy products possibly reduce absorption of **ELTROMBOPAG** (give at least 4 hours apart)

**Dalteparin** see Heparins**Danaparin**

- Analgesics: increased risk of haemorrhage when anticoagulants given with *intravenous* • **DICLOFENAC** (avoid concomitant use, including low-dose heparins); increased risk of haemorrhage when anticoagulants given with
  - **KETOROLAC** (avoid concomitant use, including low-dose heparins)
- Anticoagulants: increased risk of haemorrhage when other anticoagulants given with • **APIXABAN**, • **DABIGATRAN** and • **RIVAROXABAN** (avoid concomitant use except when switching with other anticoagulants or using heparin to maintain catheter patency)

**Danazol**

- Anticoagulants: danazol inhibits metabolism of • **COUMARINS** (enhanced anticoagulant effect)
- Antiepileptics: danazol inhibits metabolism of
  - **CARBAMAZEPINE** (increased risk of toxicity)
- Ciclosporin: danazol inhibits metabolism of • **CICLOSPORIN** (increased plasma concentration)
- Lipid-regulating Drugs: possible increased risk of myopathy when danazol given with • **SIMVASTATIN**—avoid concomitant use
- Tacrolimus: danazol possibly increases plasma concentration of **TACROLIMUS**

**Dantrolene** see Muscle Relaxants**Dapagliflozin** see Antidiabetics**Dapoxetine**

- Alcohol: increased sedative effect when dapoxetine given with
  - **ALCOHOL**
- Analgesics: possible increased risk of serotonergic effects when dapoxetine given with • **TRAMADOL** (manufacturer of dapoxetine advises tramadol should not be started until 1 week after stopping dapoxetine, avoid dapoxetine for 2 weeks after stopping tramadol)
- Antibacterials: manufacturer of dapoxetine advises dose reduction when dapoxetine given with **CLARITHROMYCIN** and **ERYTHROMYCIN** (see under Dapoxetine, p. 703); manufacturer of dapoxetine advises avoid concomitant use with
  - **TELITHROMYCIN** (increased risk of toxicity)
- Antidepressants: possible increased risk of serotonergic effects when dapoxetine given with • **SSRIS**, • **ST JOHN'S WORT**, • **DULOXETINE**, • **TRICYCLICS** and • **VENLAFAXINE** (manufacturer of dapoxetine advises SSRIs, St John's wort, duloxetine, tricyclics and venlafaxine should not be started until 1 week after stopping dapoxetine, avoid dapoxetine for 2 weeks after stopping SSRIs, St John's wort, duloxetine, tricyclics and venlafaxine); increased risk of serotonergic effects when dapoxetine given with • **MAOIS** (MAOIs should not be started until 1 week after stopping dapoxetine, avoid dapoxetine for 2 weeks after stopping MAOIs)
- Antifungals: plasma concentration of dapoxetine increased by
  - **KETOCONAZOLE**—manufacturer of dapoxetine advises avoid concomitant use; manufacturer of dapoxetine advises dose reduction when dapoxetine given with **FLUCONAZOLE** (see under Dapoxetine, p. 703); manufacturer of dapoxetine advises avoid concomitant use with • **ITRACONAZOLE** (increased risk of toxicity)
- Antivirals: manufacturer of dapoxetine advises avoid concomitant use with • **ATAZANAVIR**, • **RITONAVIR** and • **SAQUINAVIR** (increased risk of toxicity); manufacturer of dapoxetine advises dose reduction when dapoxetine given with **FOSAMPRENAVIR** (see under Dapoxetine, p. 703)
- Aprepitant: manufacturer of dapoxetine advises dose reduction when dapoxetine given with **APREPITANT** (see under Dapoxetine, p. 703)
- Calcium-channel Blockers: manufacturer of dapoxetine advises dose reduction when dapoxetine given with **DILTIAZEM** and **VERAPAMIL** (see under Dapoxetine, p. 703)
- 5HT<sub>1</sub>-receptor Agonists: possible increased risk of serotonergic effects when dapoxetine given with • **5HT<sub>1</sub> AGONISTS** (manufacturer of dapoxetine advises 5HT<sub>1</sub> agonists should not be started until 1 week after stopping dapoxetine, avoid dapoxetine for 2 weeks after stopping 5HT<sub>1</sub> agonists)
- Lithium: possible increased risk of serotonergic effects when dapoxetine given with • **LITHIUM** (manufacturer of dapoxetine advises lithium should not be started until 1 week after stopping dapoxetine, avoid dapoxetine for 2 weeks after stopping lithium)
  - Sildenafil: manufacturer of dapoxetine advises avoid concomitant use with **SILDENAFIL**
  - Tadalafil: manufacturer of dapoxetine advises avoid concomitant use with **TADALAFIL**
  - Vardenafil: manufacturer of dapoxetine advises avoid concomitant use with **VARDENAFIL**

**Dapsone**

- Antibacterials: plasma concentration of dapsone reduced by **RIFAMYCINS**; plasma concentration of both drugs may increase when dapsone given with **TRIMETHOPRIM**
- Antivirals: increased risk of ventricular arrhythmias when dapsone given with • **SAQUINAVIR**—avoid concomitant use
- Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Daptomycin**

- Ciclosporin: increased risk of myopathy when daptomycin given with • **CICLOSPORIN** (preferably avoid concomitant use)
- Lipid-regulating Drugs: increased risk of myopathy when daptomycin given with • **FIBRATES** or • **STATINS** (preferably avoid concomitant use)

**Daptomycin** (continued)

- ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Darifenacin** see Antimuscarinics**Darunavir**

- ▶ Anti-arrhythmics: darunavir possibly increases plasma concentration of **LIDOCAINE**—avoid concomitant use
- Antibacterials: darunavir increases plasma concentration of ● **RIFABUTIN** (reduce dose of rifabutin); plasma concentration of darunavir significantly reduced by ● **RIFAMPICIN**—avoid concomitant use
- ▶ Anticoagulants: avoidance of darunavir advised by manufacturer of **APIXABAN** and **RIVAROXABAN**
- Antidepressants: darunavir possibly reduces plasma concentration of **PAROXETINE** and **SERTRALINE**; plasma concentration of darunavir reduced by ● **ST JOHN'S WORT**—avoid concomitant use
- ▶ Antiepileptics: plasma concentration of darunavir possibly reduced by **CARBAMAZEPINE**, **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**
- ▶ Antifungals: plasma concentration of both drugs increased when darunavir given with **KETOCONAZOLE**
- Antimalarials: plasma concentration of lumefantrine increased when darunavir given with **ARTEMETHER WITH LUMEFANTRINE**; darunavir possibly increases plasma concentration of ● **QUININE** (increased risk of toxicity)
- Antipsychotics: darunavir possibly increases plasma concentration of ● **ARIPIPRAZOLE** (reduce dose of aripiprazole—consult aripiprazole product literature); darunavir possibly increases plasma concentration of ● **QUETIAPINE**—manufacturer of quetiapine advises avoid concomitant use
- Antivirals: avoid concomitant use of darunavir with ● **BOCEPREVIR** or ● **TELAPREVIR**; avoidance of darunavir advised by manufacturer of **DACLATASVIR** (plasma concentration of daclatasvir possibly increased); manufacturer of darunavir advises take **DIDANOSINE** 1 hour before or 2 hours after darunavir; plasma concentration of darunavir reduced by ● **EFAVIRENZ** (adjust dose—consult product literature); plasma concentration of both drugs increased when darunavir given with **INDINAVIR**; plasma concentration of darunavir reduced by ● **LOPINAVIR**, also plasma concentration of lopinavir increased (avoid concomitant use); darunavir increases plasma concentration of ● **MARAVIROC** (consider reducing dose of maraviroc); increased risk of rash when darunavir given with **RALTEGRAVIR**; plasma concentration of darunavir reduced by **SAQUINAVIR**; plasma concentration of both drugs increased when darunavir given with ● **SIMEPREVIR**—manufacturer of simeprevir advises avoid concomitant use
- Cytotoxics: darunavir possibly increases the plasma concentration of ● **BOSUTINIB**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib; darunavir possibly increases plasma concentration of ● **EVEROLIMUS**—manufacturer of everolimus advises avoid concomitant use; darunavir possibly increases the plasma concentration of ● **IBRUTINIB**—reduce dose of ibrutinib (see under Ibrutinib, p. 809)
- Ergot Alkaloids: increased risk of ergotism when darunavir given with ● **ERGOT ALKALOIDS**—manufacturer of darunavir advises avoid concomitant use
- Lipid-regulating Drugs: possible increased risk of myopathy when darunavir given with **ATORVASTATIN**; darunavir possibly increases plasma concentration of **PRAVASTATIN**; darunavir increases plasma concentration of ● **ROSUVASTATIN**—adjust dose of rosuvastatin (consult product literature); avoidance of darunavir advised by manufacturer of ● **LOMITAPIDE** (plasma concentration of lomitapide possibly increased)
- Orlistat: absorption of darunavir possibly reduced by ● **ORLISTAT**
- Ranolazine: darunavir possibly increases plasma concentration of ● **RANOLAZINE**—manufacturer of ranolazine advises avoid concomitant use

**Dasatinib**

- Antibacterials: manufacturer of dasatinib advises avoid concomitant use with **CLARITHROMYCIN**, **ERYTHROMYCIN** and

**Dasatinib**

## ● Antibacterials (continued)

- **TELITHROMYCIN** (plasma concentration of dasatinib possibly increased); metabolism of dasatinib accelerated by ● **RIFAMPICIN** (reduced plasma concentration—avoid concomitant use)
- ▶ Antiepileptics: manufacturer of dasatinib advises avoid concomitant use with **CARBAMAZEPINE**, **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE** (plasma concentration of dasatinib possibly reduced)
- ▶ Antifungals: plasma concentration of dasatinib possibly increased by **KETOCONAZOLE**; manufacturer of dasatinib advises avoid concomitant use with **ITRACONAZOLE** (plasma concentration of dasatinib possibly increased)
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Antivirals: avoidance of dasatinib advised by manufacturer of ● **BOCEPREVIR**; manufacturer of dasatinib advises avoid concomitant use with **RITONAVIR** (plasma concentration of dasatinib possibly increased)
- ▶ Grapefruit Juice: manufacturer of dasatinib advises avoid concomitant use with **GRAPEFRUIT JUICE** (plasma concentration of dasatinib possibly increased)
- ▶ Lipid-regulating Drugs: dasatinib possibly increases plasma concentration of **SIMVASTATIN**
- ▶ Ulcer-healing Drugs: plasma concentration of dasatinib possibly reduced by **FAMOTIDINE**

**Decitabine**

- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)

**Deferasirox**

- Aminophylline: deferasirox increases plasma concentration of ● **AMINOPHYLLINE** (consider reducing dose of aminophylline)
- ▶ Antacids: absorption of deferasirox possibly reduced by **ANTACIDS** containing aluminium (manufacturer of deferasirox advises avoid concomitant use)
- ▶ Antibacterials: plasma concentration of deferasirox reduced by **RIFAMPICIN**
- ▶ Antidiabetics: deferasirox increases plasma concentration of **REPAGLINIDE**
- ▶ Antipsychotics: manufacturer of deferasirox advises avoid concomitant use with **CLOZAPINE**
- ▶ Anxiolytics and Hypnotics: deferasirox possibly reduces plasma concentration of **MIDAZOLAM**
- ▶ Muscle Relaxants: manufacturer of deferasirox advises avoid concomitant use with **TIZANIDINE**
- Theophylline: deferasirox increases plasma concentration of ● **THEOPHYLLINE** (consider reducing dose of theophylline)

**Deferiprone**

- ▶ Antacids: absorption of deferiprone possibly reduced by **ANTACIDS** containing aluminium (manufacturer of deferiprone advises avoid concomitant use)

**Deflazacort** see Corticosteroids**Delamanid**

- Analgesics: increased risk of ventricular arrhythmias when delamanid given with ● **METHADONE**
- Anti-arrhythmics: increased risk of ventricular arrhythmias when delamanid given with ● **AMIODARONE** or ● **DISOPYRAMIDE**
- Antibacterials: possible increased risk of ventricular arrhythmias when delamanid given with ● **CLARITHROMYCIN** and ● **ERYTHROMYCIN**; increased risk of ventricular arrhythmias when delamanid given with ● **MOXIFLOXACIN**; plasma concentration of delamanid reduced by ● **RIFAMPICIN**; delamanid increases plasma concentration of **ETHAMBUTOL**
- Antidepressants: possible increased risk of ventricular arrhythmias when delamanid given with ● **TRICYCLICS** that prolong the QT interval
- ▶ Antiepileptics: manufacturer of delamanid advises avoid concomitant use with **CARBAMAZEPINE**
- Antipsychotics: increased risk of ventricular arrhythmias when delamanid given with ● **DROPERIDOL**, ● **HALOPERIDOL** or ● **PIMOZIDE**; increased risk of ventricular arrhythmias when delamanid given with ● **PHENOTHIAZINES** that prolong the QT interval



**Delamanid** (continued)

- Antivirals: plasma concentration of delamanid increased by **LOPINAVIR** and **RITONAVIR**; increased risk of ventricular arrhythmias when delamanid given with ● **SAQUINAVIR**
- Beta-blockers: increased risk of ventricular arrhythmias when delamanid given with ● **SOTALOL**
- Cytotoxics: increased risk of ventricular arrhythmias when delamanid given with ● **ARSENIC TRIOXIDE** or ● **VINFLUNINE**; possible increased risk of ventricular arrhythmias when delamanid given with ● **VINBLASTINE**, ● **VINCRISTINE**, ● **VINDesine** and ● **VINORELBINE**
- Domperidone: possible increased risk of ventricular arrhythmias when delamanid given with ● **DOMPERIDONE**
- Pentamidine Isetionate: increased risk of ventricular arrhythmias when delamanid given with ● **PENTAMIDINE ISETIONATE**
- Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Demeclocycline** see Tetracyclines

**Desferrioxamine**

- Antipsychotics: avoidance of desferrioxamine advised by manufacturer of **LEVOMEPROMAZINE**; manufacturer of desferrioxamine advises avoid concomitant use with **PROCHLORPERAZINE**

**Desflurane** see Anaesthetics, General

**Desloratadine** see Antihistamines

**Desmopressin**

- Analgesics: effects of desmopressin enhanced by **INDOMETACIN**
- Loperamide: plasma concentration of *oral* desmopressin increased by **LOPERAMIDE**

**Desogestrel** see Progestogens

**Dexamethasone** see Corticosteroids

**Dexamfetamine** see Sympathomimetics

**Dexibuprofen** see NSAIDs

**Dexketoprofen** see NSAIDs

**Dextrazoxane**

- Antiepileptics: dextrazoxane possibly reduces absorption of ● **FOSPHENYTOIN** and ● **PHENYTOIN**
- Ciclosporin: manufacturer of dextrazoxane advises increased risk of immunosuppression with **CICLOSPORIN**
- Tacrolimus: manufacturer of dextrazoxane advises increased risk of immunosuppression with **TACROLIMUS**
- Vaccines: risk of generalised infections when dextrazoxane given with live ● **VACCINES**—avoid concomitant use

**Dextromethorphan** see Opioid Analgesics

**Dextropropoxyphene** see Opioid Analgesics

**Diamorphine** see Opioid Analgesics

**Diazepam** see Anxiolytics and Hypnotics

**Diazoxide**

- ACE Inhibitors: enhanced hypotensive effect when diazoxide given with **ACE INHIBITORS**
- Adrenergic Neurone Blockers: enhanced hypotensive effect when diazoxide given with **ADRENERGIC NEURONE BLOCKERS**
- Alcohol: enhanced hypotensive effect when diazoxide given with **ALCOHOL**
- Aldesleukin: enhanced hypotensive effect when diazoxide given with **ALDESLEUKIN**
- Alpha-blockers: enhanced hypotensive effect when diazoxide given with **ALPHA-BLOCKERS**
- Anaesthetics, General: enhanced hypotensive effect when diazoxide given with **GENERAL ANAESTHETICS**
- Analgesics: hypotensive effect of diazoxide antagonised by **NSAIDs**
- Angiotensin-II Receptor Antagonists: enhanced hypotensive effect when diazoxide given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- Antidepressants: enhanced hypotensive effect when diazoxide given with **MAOIs** or **TRICYCLIC-RELATED ANTIDEPRESSANTS**
- Antidiabetics: diazoxide antagonises hypoglycaemic effect of **ANTI-DIABETICS**
- Antiepileptics: diazoxide reduces plasma concentration of **FOSPHENYTOIN** and **PHENYTOIN**, also effect of diazoxide may be reduced
- Antipsychotics: enhanced hypotensive effect when diazoxide given with **PHENOTHIAZINES**

**Diazoxide** (continued)

- Anxiolytics and Hypnotics: enhanced hypotensive effect when diazoxide given with **ANXIOLYTICS AND HYPNOTICS**
- Beta-blockers: enhanced hypotensive effect when diazoxide given with **BETA-BLOCKERS**
- Calcium-channel Blockers: enhanced hypotensive effect when diazoxide given with **CALCIUM-CHANNEL BLOCKERS**
- Clonidine: enhanced hypotensive effect when diazoxide given with **CLONIDINE**
- Corticosteroids: hypotensive effect of diazoxide antagonised by **CORTICOSTEROIDS**
- Diuretics: enhanced hypotensive and hyperglycaemic effects when diazoxide given with **DIURETICS**
- Dopaminergics: enhanced hypotensive effect when diazoxide given with **CO-BENELDOPA**, **CO-CARELDOPA** or **LEVODOPA**
- Methylodopa: enhanced hypotensive effect when diazoxide given with **METHYLDOPA**
- Moxisylyte: enhanced hypotensive effect when diazoxide given with **MOXISYLYTE**
- Moxonidine: enhanced hypotensive effect when diazoxide given with **MOXONIDINE**
- Muscle Relaxants: enhanced hypotensive effect when diazoxide given with **BACLOFEN** or **TIZANIDINE**
- Nitrates: enhanced hypotensive effect when diazoxide given with **NITRATES**
- Prostaglandins: enhanced hypotensive effect when diazoxide given with **ALPROSTADIL**
- Vasodilator Antihypertensives: enhanced hypotensive effect when diazoxide given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**

**Diclofenac** see NSAIDs

**Dicycloverine** see Antimuscarinics

**Didanosine**

**NOTE** Antacids in tablet formulation might affect absorption of other drugs—give at least 2 hours apart

- Allopurinol: plasma concentration of didanosine increased by ● **ALLOPURINOL** (risk of toxicity)—avoid concomitant use
- Analgesics: plasma concentration of didanosine possibly reduced by **METHADONE**
- Antibacterials: manufacturer of norfloxacin advises give didanosine at least 2 hours before or after **NORFLOXACIN**
- Antivirals: didanosine *tablets* reduce absorption of **ATAZANAVIR** (give at least 2 hours before or 1 hour after didanosine *tablets*); manufacturer of darunavir advises take didanosine 1 hour before or 2 hours after **DARUNAVIR**; plasma concentration of didanosine possibly increased by **GANCICLOVIR** and **VALGANCICLOVIR**; didanosine *tablets* reduce absorption of **INDINAVIR** (give at least 1 hour apart); increased risk of side-effects when didanosine given with ● **RIBAVIRIN**—avoid concomitant use; manufacturer of rilpivirine advises give didanosine 2 hours before or 4 hours after **RILPIVIRINE**; manufacturer of ritonavir advises didanosine and **RITONAVIR** should be taken 2.5 hours apart; increased risk of side-effects when didanosine given with ● **STAVUDINE**; plasma concentration of didanosine increased by ● **TENOFOVIR** (increased risk of toxicity)—avoid concomitant use; plasma concentration of didanosine reduced by **TIPRANAVIR**—manufacturer of tipranavir advises tipranavir and didanosine *capsules* should be taken at least 2 hours apart
- Cytotoxics: increased risk of toxicity when didanosine given with ● **HYDROXYCARBAMIDE**—avoid concomitant use
- Orlistat: absorption of didanosine possibly reduced by ● **ORLISTAT**

**Dienogest** see Progestogens

**Diethylcarbamazine**

- Antacids: excretion of diethylcarbamazine increased by **SODIUM BICARBONATE**

**Digoxin** see Cardiac Glycosides

**Dihydrocodeine** see Opioid Analgesics

**Dihydrotachysterol** see Vitamins

**Diltiazem** see Calcium-channel Blockers

**Dimethyl sulfoxide**

- Analgesics: avoid concomitant use of dimethyl sulfoxide with ● **SULINDAC**

**Dinoprostone** see Prostaglandins

**Diphenoxylate** see Opioid Analgesics

**Diphtheria Vaccines** see Vaccines

**Dipipanone** see Opioid Analgesics

### Dipyridamole

- Antacids: absorption of dipyridamole possibly reduced by **ANTACIDS**
- Anti-arrhythmics: dipyridamole enhances and extends effect of
  - **ADENOSINE** (important risk of toxicity)—reduce dose of adenosine, see p. 87
- Anticoagulants: antiplatelet action of dipyridamole enhances anticoagulant effect of ● **COUMARINS** and ● **PHENINDIONE**; dipyridamole enhances anticoagulant effect of **HEPARINS**
- Clotidogrel: increased risk of bleeding when dipyridamole given with **CLOPIDOGREL**
- Cytotoxics: dipyridamole possibly reduces effects of **FLUDARABINE**

### Disopyramide

- Anaesthetics, Local: increased myocardial depression when anti-arrhythmics given with **BUPIVACAINE**, **LEVOBUPIVACAINE**, **PRILOCAINE** or **ROPIVACAINE**
- Anti-arrhythmics: increased myocardial depression when anti-arrhythmics given with other ● **ANTI-ARRHYTHMICS**; increased risk of ventricular arrhythmias when disopyramide given with ● **AMIODARONE** or ● **DRONEDARONE**—avoid concomitant use
- Antibacterials: plasma concentration of disopyramide possibly increased by ● **AZITHROMYCIN** (increased risk of toxicity); plasma concentration of disopyramide possibly increased by ● **CLARITHROMYCIN** (increased risk of ventricular arrhythmias); plasma concentration of disopyramide increased by ● **ERYTHROMYCIN** (increased risk of toxicity); increased risk of ventricular arrhythmias when disopyramide given with ● **MOXIFLOXACIN**—avoid concomitant use; increased risk of ventricular arrhythmias when disopyramide given with ● **DELAMANID**; metabolism of disopyramide accelerated by ● **RIFAMYCINS** (reduced plasma concentration); possible increased risk of ventricular arrhythmias when disopyramide given with ● **TELITHROMYCIN**
- Anticoagulants: disopyramide may enhance or reduce anticoagulant effect of **WARFARIN**
- Antidepressants: avoidance of disopyramide advised by manufacturer of ● **CITALOPRAM** and ● **ESCITALOPRAM** (risk of ventricular arrhythmias); increased risk of ventricular arrhythmias when disopyramide given with ● **TRICYCLICS**
- Antidiabetics: disopyramide possibly enhances hypoglycaemic effect of **GLICLAZIDE**, **INSULIN** and **METFORMIN**
- Antiepileptics: plasma concentration of disopyramide reduced by **FOSPHENYTOIN** and **PHENYTOIN**; metabolism of disopyramide accelerated by **PHENOBARBITAL** and **PRIMIDONE** (reduced plasma concentration)
- Antifungals: increased risk of ventricular arrhythmias when disopyramide given with ● **KETOCONAZOLE**—avoid concomitant use; avoidance of disopyramide advised by manufacturer of ● **ITRACONAZOLE**
- Antihistamines: increased risk of ventricular arrhythmias when disopyramide given with ● **MIZOLASTINE**—avoid concomitant use
- Antimalarials: avoidance of disopyramide advised by manufacturer of ● **ARTEMETHER WITH LUMEFANTRINE** (risk of ventricular arrhythmias); avoidance of disopyramide advised by manufacturer of ● **ARTENIMOL WITH PIPERAQUINE** (possible risk of ventricular arrhythmias)
- Antimuscarinics: increased risk of antimuscarinic side-effects when disopyramide given with **ANTIMUSCARINICS**; increased risk of ventricular arrhythmias when disopyramide given with ● **TOLTERODINE**
- Antipsychotics: increased risk of ventricular arrhythmias when anti-arrhythmics that prolong the QT interval given with ● **ANTI-PSYCHOTICS** that prolong the QT interval; increased risk of ventricular arrhythmias when disopyramide given with ● **AMISULPRIDE**, ● **DROPERIDOL**, ● **PIMOZIDE** or ● **ZUCLOPENTHIXOL**—avoid concomitant use; possible increased risk of ventricular arrhythmias when disopyramide given with ● **HALOPERIDOL**—avoid concomitant use; increased risk of ventricular arrhythmias when disopyramide given with ● **PHENOTHIAZINES** or ● **SULPIRIDE**

### Disopyramide (continued)

- Antivirals: plasma concentration of disopyramide possibly increased by ● **RITONAVIR** (increased risk of toxicity); increased risk of ventricular arrhythmias when disopyramide given with ● **SAQUINAVIR**—avoid concomitant use; avoidance of disopyramide advised by manufacturer of ● **TELAPREVIR** (risk of ventricular arrhythmias)
- Atomoxetine: increased risk of ventricular arrhythmias when disopyramide given with ● **ATOMOXETINE**
- Beta-blockers: increased myocardial depression when anti-arrhythmics given with ● **BETA-BLOCKERS**; increased risk of ventricular arrhythmias when disopyramide given with ● **SOTALOL**—avoid concomitant use
- Calcium-channel Blockers: increased risk of myocardial depression and asystole when disopyramide given with ● **VERAPAMIL**
- Cytotoxics: possible increased risk of ventricular arrhythmias when disopyramide given with ● **BOSUTINIB**; possible increased risk of ventricular arrhythmias when disopyramide given with ● **VANDETANIB**—avoid concomitant use; increased risk of ventricular arrhythmias when disopyramide given with ● **ARSENIC TRIOXIDE**
- Diuretics: increased cardiac toxicity with disopyramide if hypokalaemia occurs with ● **ACETAZOLAMIDE**, ● **LOOP DIURETICS** or ● **THIAZIDES AND RELATED DIURETICS**
- Fingolimod: possible increased risk of bradycardia when disopyramide given with ● **FINGOLIMOD**
- Ivabradine: increased risk of ventricular arrhythmias when disopyramide given with ● **IVABRADINE**
- Nitrates: disopyramide reduces effects of sublingual tablets of **NITRATES** (failure to dissolve under tongue owing to dry mouth)
- Pentamidine Isetionate: possible increased risk of ventricular arrhythmias when disopyramide given with ● **PENTAMIDINE ISETIONATE**
- Ranolazine: avoidance of disopyramide advised by manufacturer of ● **RANOLAZINE**
- Sildenafil: manufacturer of disopyramide advises avoid concomitant use with **SILDENAFIL** (risk of ventricular arrhythmias)
- Tadalafil: manufacturer of disopyramide advises avoid concomitant use with **TADALAFIL** (risk of ventricular arrhythmias)
- Vardenafil: manufacturer of disopyramide advises avoid concomitant use with **VARDENAFIL** (risk of ventricular arrhythmias)

### Disulfiram

- Alcohol: disulfiram reaction when disulfiram given with **ALCOHOL**
- Aminophylline: disulfiram inhibits metabolism of **AMINOPHYLLINE** (increased risk of toxicity)
- Antibacterials: psychotic reaction reported when disulfiram given with **METRONIDAZOLE**; CNS effects of disulfiram possibly increased by **ISONIAZID**
- Anticoagulants: disulfiram enhances anticoagulant effect of ● **COUMARINS**
- Antidepressants: increased disulfiram reaction with alcohol reported with concomitant **AMITRIPTYLINE**; disulfiram inhibits metabolism of **TRICYCLICS** (increased plasma concentration)
- Antiepileptics: disulfiram inhibits metabolism of ● **FOSPHENYTOIN** and ● **PHENYTOIN** (increased risk of toxicity)
- Anxiolytics and Hypnotics: disulfiram increases risk of **TEMAZEPAM** toxicity; disulfiram inhibits metabolism of **BENZODIAZEPINES** (increased sedative effects)
- Paraldehyde: risk of toxicity when disulfiram given with ● **PARALDEHYDE**
- Theophylline: disulfiram inhibits metabolism of **THEOPHYLLINE** (increased risk of toxicity)

### Diuretics

**NOTE** Since systemic absorption may follow topical application of brinzolamide to the eye, the possibility of interactions should be borne in mind

**NOTE** Since systemic absorption may follow topical application of dorzolamide to the eye, the possibility of interactions should be borne in mind

**Diuretics** (continued)

- ACE Inhibitors: enhanced hypotensive effect when diuretics given with ● **ACE INHIBITORS**; increased risk of severe hyperkalaemia when potassium-sparing diuretics and aldosterone antagonists given with ● **ACE INHIBITORS**
- Adrenergic Neurone Blockers: enhanced hypotensive effect when diuretics given with ● **ADRENERGIC NEURONE BLOCKERS**
- Alcohol: enhanced hypotensive effect when diuretics given with ● **ALCOHOL**
- Aldesleukin: enhanced hypotensive effect when diuretics given with ● **ALDESLEUKIN**
- Aliskiren: plasma concentration of furosemide reduced by ● **ALISKIREN**; increased risk of hyperkalaemia when potassium-sparing diuretics and aldosterone antagonists given with ● **ALISKIREN**
- Allopurinol: increased risk of hypersensitivity when thiazides and related diuretics given with ● **ALLOPURINOL** especially in renal impairment
- Alpha-blockers: enhanced hypotensive effect when diuretics given with ● **ALPHA-BLOCKERS**, also increased risk of first-dose hypotension with post-synaptic alpha-blockers such as prazosin
- Aminophylline: increased risk of hypokalaemia when acetazolamide, loop diuretics or thiazides and related diuretics given with ● **AMINOPHYLLINE**
- Anaesthetics, General: enhanced hypotensive effect when diuretics given with ● **GENERAL ANAESTHETICS**
- Analgesics: diuretics increase risk of nephrotoxicity of ● **NSAIDS**, also antagonism of diuretic effect; diuretic effect of potassium canrenoate possibly antagonised by ● **NSAIDS**; possible increased risk of hyperkalaemia when potassium-sparing diuretics and aldosterone antagonists given with ● **NSAIDS**; furosemide possibly increases the excretion of ● **ACETAMINOPHEN**; effects of diuretics antagonised by ● **INDOMETACIN** and ● **KETOROLAC**; increased risk of hyperkalaemia when potassium-sparing diuretics and aldosterone antagonists given with ● **INDOMETACIN**; occasional reports of reduced renal function when triamterene given with ● **INDOMETACIN**—avoid concomitant use; increased risk of toxicity when acetazolamide given with high-dose ● **ASPIRIN**; diuretic effect of spironolactone antagonised by ● **ASPIRIN**; possible increased risk of toxicity when loop diuretics given with high-dose ● **ASPIRIN** (also possible reduced effect of loop diuretics)
- Angiotensin-II Receptor Antagonists: enhanced hypotensive effect when diuretics given with ● **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**; increased risk of hyperkalaemia when potassium-sparing diuretics and aldosterone antagonists given with ● **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- Anti-arrhythmics: hypokalaemia caused by acetazolamide, loop diuretics or thiazides and related diuretics increases cardiac toxicity with ● **AMIODARONE**; plasma concentration of eplerenone increased by ● **AMIODARONE** (reduce dose of eplerenone); hypokalaemia caused by acetazolamide, loop diuretics or thiazides and related diuretics increases cardiac toxicity with ● **DISOPYRAMIDE**; hypokalaemia caused by acetazolamide, loop diuretics or thiazides and related diuretics increases cardiac toxicity with ● **FLECAINIDE**; hypokalaemia caused by acetazolamide, loop diuretics or thiazides and related diuretics antagonises action of ● **LIDOCAINE**
- Antibacterials: plasma concentration of eplerenone increased by ● **CLARITHROMYCIN** and ● **TELITHROMYCIN**—avoid concomitant use; plasma concentration of eplerenone increased by ● **ERYTHROMYCIN** (reduce dose of eplerenone); plasma concentration of eplerenone reduced by ● **RIFAMPICIN**—avoid concomitant use; avoidance of diuretics advised by manufacturer of ● **LYMECYCLINE**; increased risk of toxicity when loop diuretics given with ● **AMINOGLYCOSIDES**, ● **POLYMYXINS** or ● **VANCOMYCIN**; acetazolamide antagonises effects of ● **METHENAMINE**; possible increased risk of hyperkalaemia when spironolactone given with ● **TRIMETHOPRIM**; increased risk of hyperkalaemia when eplerenone given with ● **TRIMETHOPRIM**
- Antidepressants: possible increased risk of hypokalaemia when loop diuretics or thiazides and related diuretics given with ● **REBOXETINE**; enhanced hypotensive effect when diuretics

**Diuretics**

- Antidepressants (continued) given with ● **MAOIS**; plasma concentration of eplerenone reduced by ● **ST JOHN'S WORT**—avoid concomitant use; increased risk of postural hypotension when diuretics given with ● **TRICYCLICS**
- Antidiabetics: loop diuretics and thiazides and related diuretics antagonise hypoglycaemic effect of ● **ANTI-DIABETICS**; diuretic effect of diuretics possibly enhanced by ● **CANAGLIFLOZIN**; avoidance of loop diuretics advised by manufacturer of ● **CANAGLIFLOZIN**; diuretic effect of loop diuretics and thiazides and related diuretics possibly enhanced by ● **DAPAGLIFLOZIN**
- Antiepileptics: plasma concentration of eplerenone reduced by ● **CARBAMAZEPINE**, ● **FOSPHENYTOIN**, ● **PHENOBARBITAL**, ● **PHENYTOIN** and ● **PRIMIDONE**—avoid concomitant use; increased risk of hyponatraemia when diuretics given with ● **CARBAMAZEPINE**; acetazolamide increases plasma concentration of ● **CARBAMAZEPINE**; effects of furosemide antagonised by ● **FOSPHENYTOIN** and ● **PHENYTOIN**; acetazolamide possibly increases plasma concentration of ● **FOSPHENYTOIN** and ● **PHENYTOIN**; increased risk of osteomalacia when carbonic anhydrase inhibitors given with ● **FOSPHENYTOIN**, ● **PHENOBARBITAL**, ● **PHENYTOIN** or ● **PRIMIDONE**; hydrochlorothiazide possibly increases plasma concentration of ● **TOPIRAMATE**; avoidance of carbonic anhydrase inhibitors in children advised by manufacturer of ● **ZONISAMIDE**
- Antifungals: plasma concentration of eplerenone increased by ● **ITRACONAZOLE** and ● **KETOCONAZOLE**—avoid concomitant use; increased risk of hypokalaemia when loop diuretics or thiazides and related diuretics given with ● **AMPHOTERICIN**; hydrochlorothiazide increases plasma concentration of ● **FLUCONAZOLE**; plasma concentration of eplerenone increased by ● **FLUCONAZOLE** (reduce dose of eplerenone)
- Antipsychotics: hypokalaemia caused by diuretics increases risk of ventricular arrhythmias with ● **AMISULPRIDE**; enhanced hypotensive effect when diuretics given with ● **PHENOTHIAZINES**; hypokalaemia caused by diuretics increases risk of ventricular arrhythmias with ● **PIMOZIDE** (avoid concomitant use)
- Antivirals: plasma concentration of eplerenone increased by ● **RITONAVIR**—avoid concomitant use; plasma concentration of eplerenone increased by ● **SAQUINAVIR** (reduce dose of eplerenone)
- Anxiolytics and Hypnotics: enhanced hypotensive effect when diuretics given with ● **ANXIOLYTICS AND HYPNOTICS**; administration of parenteral furosemide with ● **CHLORAL** may displace thyroid hormone from binding sites
- Atomoxetine: hypokalaemia caused by diuretics increases risk of ventricular arrhythmias with ● **ATOMOXETINE**
- Beta-blockers: enhanced hypotensive effect when diuretics given with ● **BETA-BLOCKERS**; hypokalaemia caused by loop diuretics or thiazides and related diuretics increases risk of ventricular arrhythmias with ● **SOTALOL**
- Calcium Salts: increased risk of hypercalcaemia when thiazides and related diuretics given with ● **CALCIUM SALTS**
- Calcium-channel Blockers: enhanced hypotensive effect when diuretics given with ● **CALCIUM-CHANNEL BLOCKERS**; plasma concentration of eplerenone increased by ● **DILTIAZEM** and ● **VERAPAMIL** (reduce dose of eplerenone)
- Cardiac Glycosides: hypokalaemia caused by acetazolamide, loop diuretics or thiazides and related diuretics increases cardiac toxicity with ● **CARDIAC GLYCOSIDES**; spironolactone increases plasma concentration of ● **DIGOXIN**; potassium canrenoate possibly increases plasma concentration of ● **DIGOXIN**
- Ciclosporin: increased risk of nephrotoxicity and possibly hypermagnesaemia when thiazides and related diuretics given with ● **CICLOSPORIN**; increased risk of hyperkalaemia when potassium-sparing diuretics and aldosterone antagonists given with ● **CICLOSPORIN**; acetazolamide possibly increases plasma concentration of ● **CICLOSPORIN**
- Clonidine: enhanced hypotensive effect when diuretics given with ● **CLONIDINE**
- Corticosteroids: diuretic effect of diuretics antagonised by ● **CORTICOSTEROIDS**; increased risk of hypokalaemia when

**Diuretics**

Corticosteroids (continued)

acetazolamide, loop diuretics or thiazides and related diuretics given with **CORTICOSTEROIDS**

- Cytotoxics: alkaline urine due to acetazolamide increases excretion of **METHOTREXATE**; hypokalaemia caused by acetazolamide, loop diuretics or thiazides and related diuretics increases risk of ventricular arrhythmias with
  - **ARSENIC TRIOXIDE**; avoidance of spirinolactone advised by manufacturer of **MITOTANE** (antagonism of effect); increased risk of nephrotoxicity and ototoxicity when diuretics given with **PLATINUM COMPOUNDS**
- Diazoxide: enhanced hypotensive and hyperglycaemic effects when diuretics given with **DIAZOXIDE**
- Diuretics: increased risk of hypokalaemia when loop diuretics or thiazides and related diuretics given with **ACETAZOLAMIDE**; profound diuresis possible when metolazone given with **FUROSEMIDE**; increased risk of hypokalaemia when thiazides and related diuretics given with **LOOP DIURETICS**
- Dopaminergics: enhanced hypotensive effect when diuretics given with **CO-BENELDOPA**, **CO-CARELDOPA** or **LEVODOPA**
- Hormone Antagonists: increased risk of hypercalcaemia when thiazides and related diuretics given with **TOREMIFENE**
- Lipid-regulating Drugs: absorption of thiazides and related diuretics reduced by **COLESTIPOL** and **COLESTYRAMINE** (give at least 2 hours apart)
- Lithium: loop diuretics and thiazides and related diuretics reduce excretion of ● **LITHIUM** (increased plasma concentration and risk of toxicity)—loop diuretics safer than thiazides; potassium-sparing diuretics and aldosterone antagonists reduce excretion of ● **LITHIUM** (increased plasma concentration and risk of toxicity); acetazolamide increases the excretion of ● **LITHIUM**
- Methyldopa: enhanced hypotensive effect when diuretics given with **METHYLDOPA**
- Moxisylyte: enhanced hypotensive effect when diuretics given with **MOXISYLYTE**
- Moxonidine: enhanced hypotensive effect when diuretics given with **MOXONIDINE**
- Muscle Relaxants: enhanced hypotensive effect when diuretics given with **BACLOFEN** or **TIZANIDINE**
- Nitrates: enhanced hypotensive effect when diuretics given with **NITRATES**
- Oestrogens: diuretic effect of diuretics antagonised by **OESTROGENS**
- Potassium Salts: increased risk of hyperkalaemia when potassium-sparing diuretics and aldosterone antagonists given with ● **POTASSIUM SALTS**
- Progestogens: increased risk of hyperkalaemia when potassium-sparing diuretics and aldosterone antagonists given with **DROSPIRENONE** (monitor serum potassium during first cycle)
- Prostaglandins: enhanced hypotensive effect when diuretics given with **ALPROSTADIL**
- Sympathomimetics, Beta: increased risk of hypokalaemia when acetazolamide, loop diuretics or thiazides and related diuretics given with high doses of **BETA<sub>2</sub>SYMPATHOMIMETICS**
- Tacrolimus: increased risk of hyperkalaemia when potassium-sparing diuretics and aldosterone antagonists given with ● **TACROLIMUS**
- Theophylline: increased risk of hypokalaemia when acetazolamide, loop diuretics or thiazides and related diuretics given with **THEOPHYLLINE**
- Vasodilator Antihypertensives: enhanced hypotensive effect when diuretics given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**
- Vitamins: increased risk of hypercalcaemia when thiazides and related diuretics given with **ALFACALCIDOL**, **CALCITRIOL**, **COLECALCIFEROL**, **DIHYDROTACHYSTEROL**, **ERGOCALCIFEROL**, **PARICALCITOL** or **VITAMIN D**

**Diuretics, Loop** see Diuretics**Diuretics, Potassium-sparing and Aldosterone Antagonists** see Diuretics**Diuretics, Thiazide and related** see Diuretics**Dobutamine** see Sympathomimetics**Docetaxel**

- Antibacterials: plasma concentration of docetaxel possibly increased by ● **CLARITHROMYCIN** and ● **TELITHROMYCIN**—manufacturer of docetaxel advises avoid concomitant use or consider reducing docetaxel dose
- Antifungals: *in vitro* studies suggest a possible interaction between docetaxel and **KETOCONAZOLE** (consult docetaxel product literature); plasma concentration of docetaxel possibly increased by ● **ITRACONAZOLE** and ● **VORICONAZOLE**—manufacturer of docetaxel advises avoid concomitant use or consider reducing docetaxel dose
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Antivirals: plasma concentration of docetaxel possibly increased by ● **INDINAVIR**, ● **RITONAVIR** and ● **SAQUINAVIR**—manufacturer of docetaxel advises avoid concomitant use or consider reducing docetaxel dose
- Ciclosporin: *in vitro* studies suggest a possible interaction between docetaxel and **CYCLOSPORIN** (consult docetaxel product literature)
- Cytotoxics: possible increased risk of neutropenia when docetaxel given with **LAPATINIB**; plasma concentration of docetaxel increased by **SORAFENIB**

**Dolutegravir**

- Antacids: absorption of dolutegravir reduced by **ALUMINIUM HYDROXIDE** and **ORAL MAGNESIUM SALTS**—manufacturer of dolutegravir advises give at least 2 hours before or 6 hours after aluminium hydroxide and oral magnesium salts
- Antibacterials: plasma concentration of dolutegravir reduced by ● **RIFAMPICIN** (see under Dolutegravir, p. 557)
- Antidepressants: manufacturer of dolutegravir advises avoid concomitant use with **ST JOHN'S WORT**
- Antiepileptics: manufacturer of dolutegravir advises avoid concomitant use with **CARBAMAZEPINE**, **FOSPHENYTOIN**, **OXCARBAZEPINE**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**
- Antivirals: plasma concentration of dolutegravir reduced by ● **EFAVIRENZ**, ● **ETRAVIRINE** and ● **TIPRANAVIR** (see under Dolutegravir, p. 557); plasma concentration of dolutegravir reduced by ● **FOSAMPRENAVIR**; plasma concentration of dolutegravir possibly reduced by ● **NEVIRAPINE** (see under Dolutegravir, p. 557)
- Calcium Salts: absorption of dolutegravir reduced by **CALCIUM SALTS**—manufacturer of dolutegravir advises give at least 2 hours before or 6 hours after calcium salts
- Iron Salts: absorption of dolutegravir reduced by *oral* **IRON SALTS**—manufacturer of dolutegravir advises give at least 2 hours before or 6 hours after *oral* iron salts

**Domperidone**

- Analgesics: effects of domperidone on gastro-intestinal activity antagonised by **OPIOID ANALGESICS**
- Antibacterials: possible increased risk of ventricular arrhythmias when domperidone given with ● **CLARITHROMYCIN** or ● **TELITHROMYCIN**—avoid concomitant use; plasma concentration of domperidone increased by ● **ERYTHROMYCIN** (increased risk of ventricular arrhythmias—avoid concomitant use); possible increased risk of ventricular arrhythmias when domperidone given with ● **DELANID**
- Antifungals: avoidance of domperidone advised by manufacturer of ● **KETOCONAZOLE** (risk of ventricular arrhythmias); possible increased risk of ventricular arrhythmias when domperidone given with ● **ITRACONAZOLE** or ● **VORICONAZOLE**—avoid concomitant use
- Antimalarials: avoidance of domperidone advised by manufacturer of ● **ARTENIMOL WITH PIPERAQUINE** (possible risk of ventricular arrhythmias)
- Antimuscarinics: effects of domperidone on gastro-intestinal activity antagonised by **ANTIMUSCARINICS**
- Antivirals: possible increased risk of ventricular arrhythmias when domperidone given with ● **BOCEPREVIR**, ● **RITONAVIR**, ● **SAQUINAVIR** or ● **TELAPREVIR**—avoid concomitant use
- Cobicistat: possible increased risk of ventricular arrhythmias when domperidone given with ● **COBICISTAT**—avoid concomitant use
- Cytotoxics: avoidance of domperidone advised by manufacturer of ● **BOSUTINIB** (risk of ventricular arrhythmias)



**Domperidone** (continued)

- ▷ Dopaminergics: domperidone possibly antagonises hypoprolactinaemic effects of **BROMOCRIPTINE** and **CABERGOLINE**

**Donepezil** see Parasympathomimetics**Dopamine** see Sympathomimetics

- ▷ **Dopaminergics** see Amantadine, Apomorphine, Bromocriptine, Cabergoline, Entacapone, Levodopa, Pergolide, Pramipexole, Quinagolide, Rasagiline, Ropinirole, Rotigotine, Selegiline, and Tolcapone

**Dopexamine** see Sympathomimetics**Dorzolamide** see Diuretics**Dosulepin** see Antidepressants, Tricyclic**Doxapram**

- ▷ Aminophylline: increased CNS stimulation when doxapram given with **AMINOPHYLLINE**
- Anaesthetics, General: increased risk of arrhythmias when doxapram given with ● **VOLATILE LIQUID GENERAL ANAESTHETICS** (avoid doxapram for at least 10 minutes after volatile liquid general anaesthetics)
- ▷ Antidepressants: effects of doxapram enhanced by **MAOIS**
- ▷ Sympathomimetics: increased risk of hypertension when doxapram given with **SYMPATHOMIMETICS**
- ▷ Theophylline: increased CNS stimulation when doxapram given with **THEOPHYLLINE**

**Doxazosin** see Alpha-blockers**Doxepin** see Antidepressants, Tricyclic**Doxorubicin**

- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- ▷ Antivirals: doxorubicin possibly inhibits effects of **STAVUDINE**
- ▷ Calcium-channel Blockers: plasma concentration of doxorubicin possibly increased by **VERAPAMIL**
- ▷ Cardiac Glycosides: doxorubicin possibly reduces absorption of **DIGOXIN tablets**
- Ciclosporin: increased risk of neurotoxicity when doxorubicin given with ● **CICLOSPORIN**
- ▷ Cytotoxics: plasma concentration of doxorubicin increased by **SORAFENIB**
- ▷ Ulcer-healing Drugs: plasma concentration of doxorubicin reduced by **CIMETIDINE**
- Vaccines: risk of generalised infections when doxorubicin given with live ● **VACCINES**—avoid concomitant use

**Doxycycline** see Tetracyclines**Dronedarone**

- ▷ Anaesthetics, Local: increased myocardial depression when anti-arrhythmics given with **BUPIVACAINE**, **LEVOBUPIVACAINE**, **PRILOCAINE** or **ROPIVACAINE**
- Anti-arrhythmics: increased myocardial depression when anti-arrhythmics given with other ● **ANTI-ARRHYTHMICS**; increased risk of ventricular arrhythmias when dronedarone given with ● **AMIODARONE** or ● **DISOPYRAMIDE**—avoid concomitant use
- Antibacterials: manufacturer of dronedarone advises avoid concomitant use with ● **CLARITHROMYCIN** (risk of ventricular arrhythmias); plasma concentration of dronedarone increased by ● **ERYTHROMYCIN** (increased risk of ventricular arrhythmias—avoid concomitant use); plasma concentration of dronedarone reduced by ● **RIFAMPICIN**—avoid concomitant use; avoidance of dronedarone advised by manufacturer of **FIDAXOMICIN**; increased risk of ventricular arrhythmias when dronedarone given with ● **TELITHROMYCIN**—avoid concomitant use
- Anticoagulants: dronedarone possibly enhances anticoagulant effect of ● **COUMARINS** and ● **PHENINDIONE**; dronedarone increases plasma concentration of ● **DABIGATRAN**—avoid concomitant use; avoidance of dronedarone advised by manufacturer of **RIVAROXABAN**
- Antidepressants: avoidance of dronedarone advised by manufacturer of ● **CITALOPRAM** and ● **ESCITALOPRAM** (risk of ventricular arrhythmias); plasma concentration of dronedarone possibly reduced by ● **ST JOHN'S WORT**—avoid concomitant use; manufacturer of dronedarone advises avoid concomitant use with ● **TRICYCLICS** (risk of ventricular arrhythmias)

**Dronedarone** (continued)

- Antiepileptics: plasma concentration of dronedarone possibly reduced by ● **CARBAMAZEPINE**, ● **FOSPHENYTOIN**, ● **PHENOBARBITAL**, ● **PHENYTOIN** and ● **PRIMIDONE**—avoid concomitant use
- Antifungals: plasma concentration of dronedarone increased by ● **KETOCONAZOLE**—avoid concomitant use; manufacturer of dronedarone advises avoid concomitant use with ● **ITRACONAZOLE**, ● **POSACONAZOLE** and ● **VORICONAZOLE**
- Antipsychotics: increased risk of ventricular arrhythmias when anti-arrhythmics that prolong the QT interval given with ● **ANTIPSYCHOTICS** that prolong the QT interval; manufacturer of dronedarone advises avoid concomitant use with ● **PHENOTHAZINES** (risk of ventricular arrhythmias)
- Antivirals: manufacturer of dronedarone advises avoid concomitant use with ● **RITONAVIR**; increased risk of ventricular arrhythmias when dronedarone given with ● **SAQUINAVIR**—avoid concomitant use
- Beta-blockers: increased myocardial depression when anti-arrhythmics given with ● **BETA-BLOCKERS**; dronedarone possibly increases plasma concentration of **METOPROLOL** and **PROPRANOLOL**; increased risk of ventricular arrhythmias when dronedarone given with ● **SOTALOL**—avoid concomitant use
- Calcium-channel Blockers: plasma concentration of dronedarone increased by ● **NIFEDIPINE**; increased risk of bradycardia and myocardial depression when dronedarone given with ● **DILTIAZEM** and ● **VERAPAMIL**
- Cardiac Glycosides: dronedarone increases plasma concentration of ● **DIGOXIN** (halve dose of digoxin)
- Cytotoxics: dronedarone possibly increases the plasma concentration of ● **BOSUTINIB**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib; dronedarone possibly increases the plasma concentration of ● **IBRUTINIB**—reduce dose of ibrutinib (see under Ibrutinib, p. 809)
- Fingolimod: possible increased risk of bradycardia when dronedarone given with ● **FINGOLIMOD**
- Grapefruit Juice: plasma concentration of dronedarone increased by ● **GRAPEFRUIT JUICE**—avoid concomitant use
- Lipid-regulating Drugs: dronedarone possibly increases plasma concentration of **ATORVASTATIN**; dronedarone increases plasma concentration of ● **ROSUVASTATIN**—adjust dose of rosuvastatin (consult product literature); increased risk of myopathy when dronedarone given with ● **SIMVASTATIN**; avoidance of dronedarone advised by manufacturer of ● **LOMITAPIDE** (plasma concentration of lomitapide possibly increased)
- ▷ Sirolimus: manufacturer of dronedarone advises caution with **SIROLIMUS**
- ▷ Tacrolimus: manufacturer of dronedarone advises caution with **TACROLIMUS**

**Propranolol** see Antipsychotics**Drosiprenone** see Progestogens**Duloxetine**

- ▷ Analgesics: possible increased serotonergic effects when SSRI-related antidepressants given with **FENTANYL**; possible increased serotonergic effects when duloxetine given with **PETHIDINE** or **TRAMADOL**
- Antibacterials: metabolism of duloxetine inhibited by ● **CIPROFLOXACIN**—avoid concomitant use
- Anticoagulants: possible increased risk of bleeding when SSRI-related antidepressants given with ● **DABIGATRAN**
- Antidepressants: metabolism of duloxetine inhibited by ● **FLUVOXAMINE**—avoid concomitant use; possible increased serotonergic effects when duloxetine given with **SSRIs**, **ST JOHN'S WORT**, **AMITRIPTYLINE**, **CLOMIPRAMINE**, ● **MOCLOBEMIDE** or **VENLAFAXINE**; duloxetine should not be started until 2 weeks after stopping ● **MAOIS**, also **MAOIs** should not be started until at least 5 days after stopping duloxetine; after stopping SSRI-related antidepressants do not start ● **MOCLOBEMIDE** for at least 1 week
- Antimalarials: avoidance of antidepressants advised by manufacturer of ● **ARTEMETHER WITH LUMEFANTRINE** and ● **ARTENIMOL WITH PIPERAQUINE**

**Duloxetine** (continued)

- ▶ Atomoxetine: possible increased risk of convulsions when antidepressants given with **ATOMOXETINE**
- Dapoxetine: possible increased risk of serotonergic effects when duloxetine given with ● **DAPOXETINE** (manufacturer of dapoxetine advises duloxetine should not be started until 1 week after stopping dapoxetine, avoid dapoxetine for 2 weeks after stopping duloxetine)
- ▶ 5HT<sub>2</sub>-receptor Agonists: possible increased serotonergic effects when duloxetine given with **5HT<sub>2</sub> AGONISTS**
- ▶ 5HT<sub>2</sub>-receptor Antagonists: possible increased serotonergic effects when SSRI-related antidepressants given with **5HT<sub>2</sub> ANTAGONISTS**
- Methylthioninium: risk of CNS toxicity when SSRI-related antidepressants given with ● **METHYLTHIONIUM**—avoid concomitant use (if avoidance not possible, use lowest possible dose of methylthioninium and observe patient for up to 4 hours after administration)

**Dutasteride**

- ▶ Calcium-channel Blockers: plasma concentration of dutasteride increased by **DILTIAZEM** and **VERAPAMIL**

**Dydrogesterone** see Progestogens**Efavirenz**

- Analgesics: efavirenz reduces plasma concentration of **METHADONE**
- ▶ Antibacterials: efavirenz reduces plasma concentration of **CLARITHROMYCIN**, also plasma concentration of active metabolite of clarithromycin increased; efavirenz reduces plasma concentration of **RIFABUTIN**—increase dose of rifabutin; plasma concentration of efavirenz reduced by **RIFAMPICIN**—increase dose of efavirenz; efavirenz possibly reduces plasma concentration of **BEDAQUILINE**—manufacturer of bedaquiline advises avoid concomitant use
- Anticoagulants: efavirenz possibly affects plasma concentration of ● **COUMARINS**
- Antidepressants: plasma concentration of efavirenz reduced by ● **ST JOHN'S WORT**—avoid concomitant use
- ▶ Antiepileptics: plasma concentration of both drugs reduced when efavirenz given with **CARBAMAZEPINE**
- Antifungals: efavirenz reduces plasma concentration of **ITRACONAZOLE**, ● **KETOCONAZOLE** and ● **POSACONAZOLE**; efavirenz reduces plasma concentration of ● **VORICONAZOLE**, also plasma concentration of efavirenz increased (increase voriconazole dose and reduce efavirenz dose); efavirenz possibly reduces plasma concentration of **CASPOFUNGIN**—consider increasing dose of caspofungin
- Antimalarials: efavirenz reduces plasma concentration of ● **ARTEMETHER WITH LUMEFANTRINE**; efavirenz possibly affects plasma concentration of **PROGUANIL**
- Antipsychotics: efavirenz possibly reduces plasma concentration of ● **ARIPRAZOLE** (avoid concomitant use or consider increasing the dose of aripiprazole—consult aripiprazole product literature); efavirenz possibly increases plasma concentration of ● **PIMOZIDE** (increased risk of ventricular arrhythmias—avoid concomitant use)
- Antivirals: avoidance of efavirenz advised by manufacturer of ● **ATAZANAVIR** (plasma concentration of atazanavir reduced); efavirenz reduces the plasma concentration of ● **DACLATASVIR**—increase dose of daclatasvir (see under Daclatasvir, p. 544); efavirenz reduces plasma concentration of ● **DARUNAVIR** (adjust dose—consult product literature); efavirenz reduces the plasma concentration of ● **DOLUTEGRAVIR** (see under Dolutegravir, p. 557); avoidance of efavirenz advised by manufacturer of **ELVITEGRAVIR**; efavirenz possibly reduces plasma concentration of ● **ETRAVIRINE**—avoid concomitant use; efavirenz reduces plasma concentration of **INDINAVIR** and **SIMEPREVIR**; efavirenz reduces plasma concentration of ● **LOPINAVIR**—consider increasing dose of lopinavir; efavirenz possibly reduces plasma concentration of ● **MARAVIROC**—consider increasing dose of maraviroc; plasma concentration of efavirenz reduced by ● **NEVIRAPINE**—avoid concomitant use; toxicity of efavirenz increased by ● **RITONAVIR**, monitor liver function tests—manufacturer of **Atripla®** advises avoid concomitant use with *high-dose* ritonavir; efavirenz significantly reduces

**Efavirenz**

- Antivirals (continued)
    - plasma concentration of ● **SAQUINAVIR**; efavirenz reduces plasma concentration of ● **TELAPREVIR**—increase dose of telaprevir
  - Anxiolytics and Hypnotics: increased risk of prolonged sedation when efavirenz given with ● **MIDAZOLAM**—avoid concomitant use
  - Atovaquone: efavirenz reduces plasma concentration of ● **ATOVAQUONE**—avoid concomitant use
  - ▶ Avanafil: efavirenz possibly reduces plasma concentration of **AVANAFIL**—manufacturer of avanafil advises avoid concomitant use
  - ▶ Bupropion: efavirenz accelerates metabolism of **BUPROPION** (reduced plasma concentration)
  - ▶ Calcium-channel Blockers: efavirenz reduces plasma concentration of **DILTIAZEM**
  - Ciclosporin: efavirenz possibly reduces plasma concentration of ● **CICLOSPORIN**
  - Cytotoxics: efavirenz possibly reduces plasma concentration of ● **BOSUTINIB**—manufacturer of bosutinib advises avoid concomitant use
  - Ergot Alkaloids: increased risk of ergotism when efavirenz given with ● **ERGOT ALKALOIDS**—avoid concomitant use
  - ▶ Grapefruit Juice: plasma concentration of efavirenz possibly increased by **GRAPEFRUIT JUICE**
  - ▶ Lipid-regulating Drugs: efavirenz reduces plasma concentration of **ATORVASTATIN**, **PRAVASTATIN** and **SIMVASTATIN**
  - Orlistat: absorption of efavirenz possibly reduced by ● **ORLISTAT**
  - Progestogens: efavirenz possibly reduces contraceptive effect of ● **PROGESTOGENS**
  - Tacrolimus: efavirenz possibly affects plasma concentration of ● **TACROLIMUS**
- Eletriptan** see 5HT<sub>1</sub>-receptor Agonists (under HT)
- Eltrombopag**
- ▶ Antacids: absorption of eltrombopag reduced by **ANTACIDS** (give at least 4 hours apart)
  - ▶ Antivirals: plasma concentration of eltrombopag possibly reduced by **LOPINAVIR**
  - ▶ Calcium Salts: absorption of eltrombopag possibly reduced by **CALCIUM SALTS** (give at least 4 hours apart)
  - ▶ Dairy Products: absorption of eltrombopag possibly reduced by **DAIRY PRODUCTS** (give at least 4 hours apart)
  - ▶ Iron Salts: absorption of eltrombopag possibly reduced by **oral IRON SALTS** (give at least 4 hours apart)
  - Lipid-regulating Drugs: eltrombopag increases plasma concentration of ● **ROSUVASTATIN**—adjust dose of rosuvastatin (consult product literature)
  - ▶ Selenium: absorption of eltrombopag possibly reduced by **SELENIUM** (give at least 4 hours apart)
  - ▶ Zinc: absorption of eltrombopag possibly reduced by **ZINC** (give at least 4 hours apart)
- Elvitegravir**
- ▶ Antacids: absorption of elvitegravir reduced by **ALUMINIUM HYDROXIDE** and **ORAL MAGNESIUM SALTS** (give at least 4 hours apart)
  - Antibacterials: plasma concentration of elvitegravir reduced by ● **RIFABUTIN** also plasma concentration of active metabolite of rifabutin increased—reduce dose of rifabutin; manufacturer of elvitegravir advises avoid concomitant use with ● **RIFAMPICIN**
  - Antidepressants: manufacturer of elvitegravir advises avoid concomitant use with ● **ST JOHN'S WORT**
  - Antiepileptics: manufacturer of elvitegravir advises avoid concomitant use with ● **CARBAMAZEPINE**, ● **FOSPHENYTOIN**, ● **PHENOBARBITAL**, ● **PHENYTOIN** and ● **PRIMIDONE**
  - Antivirals: plasma concentration of elvitegravir increased by ● **ATAZANAVIR** and ● **LOPINAVIR** boosted with ritonavir (reduce dose of elvitegravir); manufacturer of elvitegravir advises avoid concomitant use with **EFAVIRENZ** and **NEVIRAPINE**
  - ▶ Bosentan: manufacturer of elvitegravir advises avoid concomitant use with **BOSENTAN**
  - Orlistat: absorption of elvitegravir possibly reduced by ● **ORLISTAT**

**Elvitegravir** (continued)

- Progestogens: elvitegravir increases plasma concentration of **NORGESTIMATE**

**Empagliflozin** see Antidiabetics**Emtricitabine**

- Antivirals: manufacturer of emtricitabine advises avoid concomitant use with **LAMIVUDINE**
- Orlistat: absorption of emtricitabine possibly reduced by
  - **ORLISTAT**

**Enalapril** see ACE Inhibitors**Enfuvirtide**

- Orlistat: absorption of enfuvirtide possibly reduced by
  - **ORLISTAT**

**Enoxaparin** see Heparins**Enoximone** see Phosphodiesterase Inhibitors**Entacapone**

- Anticoagulants: entacapone enhances anticoagulant effect of
  - **WARFARIN**
- Antidepressants: manufacturer of entacapone advises caution with **MOCLOBEMIDE**, **TRICYCLICS** and **VENLAFAXINE**; avoid concomitant use of entacapone with non-selective ● **MAOIS**
- Dopaminergics: entacapone possibly enhances effects of **APOMORPHINE**; entacapone possibly reduces plasma concentration of **RASAGILINE**; manufacturer of entacapone advises max. dose of 10 mg **SELEGILINE** if used concomitantly
- Iron Salts: absorption of entacapone reduced by *oral* **IRON SALTS**
- Memantine: effects of dopaminergics possibly enhanced by **MEMANTINE**
- Methyldopa: entacapone possibly enhances effects of **METHYLDOPA**; antiparkinsonian effect of dopaminergics antagonised by **METHYLDOPA**
- Sympathomimetics: entacapone possibly enhances effects of **ADRENALINE (EPINEPHRINE)**, **DOBUTAMINE**, **DOPAMINE** and **NORADRENALINE (NOREPINEPHRINE)**

**Enteral Foods**

- Anticoagulants: the presence of vitamin K in some enteral feeds can antagonise the anticoagulant effect of ● **COUMARINS** and ● **PHENINDIONE**
- Antiepileptics: enteral feeds possibly reduce absorption of **FOSPHENYTOIN** and **PHENYTOIN**

**Enzalutamide**

- Antibacterials: manufacturer of enzalutamide advises avoid concomitant use with **RIFAMPICIN**
- Anticoagulants: enzalutamide possibly reduces plasma concentration of ● **COUMARINS**
- Lipid-regulating Drugs: plasma concentration of enzalutamide increased by ● **GEMFIBROZIL**—manufacturer of enzalutamide advises avoid concomitant use or halve dose of enzalutamide

**Ephedrine** see Sympathomimetics**Epinephrine**

- NOTE Epinephrine interactions as for adrenaline, see under sympathomimetics

**Epirubicin**

- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)
- Ciclosporin: plasma concentration of epirubicin increased by
  - **CICLOSPORIN**
- Ulcer-healing Drugs: plasma concentration of epirubicin increased by ● **CIMETIDINE**

**Eplerenone** see Diuretics**Eprosartan** see Angiotensin-II Receptor Antagonists**Eptifibatide**

- Iloprost: increased risk of bleeding when eptifibatide given with **ILOPROST**

**Ergocalciferol** see Vitamins**Ergometrine** see Ergot Alkaloids**Ergot Alkaloids**

- Antibacterials: increased risk of ergotism when ergometrine given with ● **CLARITHROMYCIN** or ● **ERYTHROMYCIN**—avoid concomitant use; increased risk of ergotism when ergotamine given with ● **MACROLIDES** or ● **TELITHROMYCIN**—avoid concomitant use; increased risk of ergotism when ergotamine given with **TETRACYCLINES**

**Ergot Alkaloids** (continued)

- Antidepressants: possible risk of hypertension when ergotamine given with **REBOXETINE**
- Antifungals: avoidance of ergot alkaloids advised by manufacturer of ● **KETOCONAZOLE**; avoidance of ergometrine advised by manufacturer of ● **ITRACONAZOLE** (increased risk of ergotism); increased risk of ergotism when ergometrine given with ● **VORICONAZOLE**—avoid concomitant use; increased risk of ergotism when ergotamine given with ● **IMIDAZOLES** or ● **TRIAZOLES**—avoid concomitant use
- Antipsychotics: plasma concentration of ergot alkaloids possibly increased by **LURASIDONE** (increased risk of toxicity)
- Antivirals: plasma concentration of ergot alkaloids possibly increased by ● **ATAZANAVIR**—avoid concomitant use; avoidance of ergot alkaloids advised by manufacturer of ● **BOCEPREVIR** and ● **TELAPREVIR**; increased risk of ergotism when ergot alkaloids given with ● **DARUNAVIR**—manufacturer of darunavir advises avoid concomitant use; increased risk of ergotism when ergot alkaloids given with ● **EFAVIRENZ**—avoid concomitant use; increased risk of ergotism when ergotamine given with ● **FOSAMPRENNAVIR**, ● **INDINAVIR**, ● **RITONAVIR** or ● **SAQUINAVIR**—avoid concomitant use; increased risk of ergotism when ergometrine given with ● **INDINAVIR** or ● **RITONAVIR**—avoid concomitant use
- Beta-blockers: increased peripheral vasoconstriction when ergotamine given with **BETA-BLOCKERS**
- Cobicistat: plasma concentration of ergot alkaloids possibly increased by ● **COBICISTAT**—manufacturer of cobicistat advises avoid concomitant use
- Cytotoxics: caution with ergot alkaloids advised by manufacturer of ● **CRIZOTINIB**; avoidance of ergotamine advised by manufacturer of **IDELALISIB**
- 5HT<sub>2</sub>-receptor Agonists: increased risk of vasospasm when ergotamine given with ● **ALMOTRIPTAN**, ● **RIZATRIPTAN**, ● **SUMATRIPTAN** or ● **ZOLMITRIPTAN** (avoid ergotamine for 6 hours after almotriptan, rizatriptan, sumatriptan or zolmitriptan, avoid almotriptan, rizatriptan, sumatriptan or zolmitriptan for 24 hours after ergotamine); increased risk of vasospasm when ergotamine given with ● **ELETRIPTAN**, ● **FROVATRIPTAN** or ● **NARATRIPTAN** (avoid ergotamine for 24 hours after eletriptan, frovatriptan or naratriptan, avoid eletriptan, frovatriptan or naratriptan for 24 hours after ergotamine)
- Sympathomimetics: increased risk of ergotism when ergotamine given with **SYMPATHOMIMETICS**
- Ticagrelor: plasma concentration of ergot alkaloids possibly increased by ● **TICAGRELO**
- Ulcer-healing Drugs: increased risk of ergotism when ergotamine given with ● **CIMETIDINE**—avoid concomitant use

**Ergotamine** see Ergot Alkaloids**Eribulin**

- Antibacterials: plasma concentration of eribulin possibly reduced by **RIFAMPICIN**
- Antidepressants: plasma concentration of eribulin possibly reduced by **ST JOHN'S WORT**
- Antiepileptics: plasma concentration of eribulin possibly reduced by **CARBAMAZEPINE**, **FOSPHENYTOIN** and **PHENYTOIN**
- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)

**Erlotinib**

- Analgesics: increased risk of bleeding when erlotinib given with ● **NSAIDS**
- Antacids: plasma concentration of erlotinib possibly reduced by ● **ANTACIDS**—give antacids at least 4 hours before or 2 hours after erlotinib
- Antibacterials: plasma concentration of erlotinib increased by **CIPROFLOXACIN**; metabolism of erlotinib accelerated by **RIFAMPICIN** (reduced plasma concentration)
- Anticoagulants: increased risk of bleeding when erlotinib given with ● **COUMARINS**
- Antifungals: metabolism of erlotinib inhibited by **KETOCONAZOLE** (increased plasma concentration)
- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)
- Antivirals: avoidance of erlotinib advised by manufacturer of ● **BOCEPREVIR**

**Erlotinib** (continued)

- ▶ Cytotoxics: plasma concentration of erlotinib possibly increased by **CAPECITABINE**
- Ulcer-healing Drugs: manufacturer of erlotinib advises avoid concomitant use with ● **CIMETIDINE**, ● **ESOMEPRAZOLE**, ● **FAMOTIDINE**, ● **LANSOPRAZOLE**, ● **NIZATIDINE**, ● **PANTOPRAZOLE** and ● **RABEPRAZOLE**; plasma concentration of erlotinib reduced by ● **RANITIDINE**—manufacturer of erlotinib advises give at least 2 hours before or 10 hours after ranitidine; plasma concentration of erlotinib reduced by ● **OMEPRAZOLE**—manufacturer of erlotinib advises avoid concomitant use

**Ertapenem**

- Antiepileptics: carbapenems reduce plasma concentration of ● **SODIUM VALPROATE** and ● **VALPROIC ACID**—avoid concomitant use
- ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Erythromycin** *see* Macrolides**Escitalopram** *see* Antidepressants, SSRI**Eslicarbazepine**

- ▶ Anticoagulants: eslicarbazepine reduces plasma concentration of **WARFARIN**
- Antidepressants: anticonvulsant effect of antiepileptics possibly antagonised by ● **MAOIS** and ● **TRICYCLIC-RELATED ANTIDEPRESSANTS** (convulsive threshold lowered); anticonvulsant effect of antiepileptics antagonised by ● **SSRIS** and ● **TRICYCLICS** (convulsive threshold lowered)
- ▶ Antiepileptics: plasma concentration of eslicarbazepine possibly reduced by **CARBAMAZEPINE** but risk of side-effects increased; plasma concentration of eslicarbazepine reduced by **FOSPHENYTOIN** and **PHENYTOIN**, also plasma concentration of fosphenytoin and phenytoin increased; manufacturer of eslicarbazepine advises avoid concomitant use with **OXCARBAZEPINE**
- Antimalarials: anticonvulsant effect of antiepileptics antagonised by ● **MEFLOQUINE**
- Antipsychotics: anticonvulsant effect of antiepileptics antagonised by ● **ANTIPSYCHOTICS** (convulsive threshold lowered)
- ▶ Lipid-regulating Drugs: eslicarbazepine reduces plasma concentration of **ROSUVASTATIN**; eslicarbazepine reduces plasma concentration of **SIMVASTATIN**—consider increasing dose of simvastatin
- Oestrogens: eslicarbazepine accelerates metabolism of ● **OESTROGENS** (reduced contraceptive effect with combined oral contraceptives, contraceptive patches, and vaginal rings—*see* Contraceptive Interactions in BNF)
- Orlistat: possible increased risk of convulsions when antiepileptics given with ● **ORLISTAT**
- Progestogens: eslicarbazepine accelerates metabolism of ● **PROGESTOGENS** (reduced contraceptive effect with combined oral contraceptives, progestogen-only oral contraceptives, contraceptive patches, vaginal rings, etonogestrel-releasing implant, and emergency hormonal contraception—*see* Contraceptive Interactions in BNF)

**Emmolol** *see* Beta-blockers**Esomeprazole** *see* Proton Pump Inhibitors**Estradiol** *see* Oestrogens**Estramustine**

- ▶ Antacids: absorption of estramustine possibly reduced by **ALUMINIUM HYDROXIDE** and **ORAL MAGNESIUM SALTS**—manufacturer of estramustine advises avoid concomitant administration
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Bisphosphonates: plasma concentration of estramustine increased by ● **SODIUM CLODRONATE**
- ▶ Calcium Salts: absorption of estramustine reduced by **CALCIUM SALTS** (manufacturer of estramustine advises avoid concomitant administration)

**Estriol** *see* Oestrogens**Estrone** *see* Oestrogens**Etanercept**

- Abatacept: avoid concomitant use of etanercept with ● **ABATACEPT**

**Etanercept** (continued)

- Anakinra: avoid concomitant use of etanercept with ● **ANAKINRA**
- Vaccines: risk of generalised infections when etanercept given with live ● **VACCINES**—avoid concomitant use

**Ethambutol**

- ▶ Antibacterials: plasma concentration of ethambutol increased by **DELAMANID**
- ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—*see* under Typhoid Vaccine in BNF

**Ethinylestradiol** *see* Oestrogens**Ethosuximide**

- Antibacterials: metabolism of ethosuximide inhibited by ● **ISONIAZID** (increased plasma concentration and risk of toxicity)
- Antidepressants: anticonvulsant effect of antiepileptics possibly antagonised by ● **MAOIS** and ● **TRICYCLIC-RELATED ANTIDEPRESSANTS** (convulsive threshold lowered); anticonvulsant effect of antiepileptics antagonised by ● **SSRIS** and ● **TRICYCLICS** (convulsive threshold lowered)
- Antiepileptics: plasma concentration of ethosuximide possibly reduced by **CARBAMAZEPINE**, **PHENOBARBITAL** and **PRIMIDONE**; plasma concentration of ethosuximide possibly reduced by ● **FOSPHENYTOIN** and ● **PHENYTOIN**, also plasma concentration of fosphenytoin and phenytoin possibly increased; plasma concentration of ethosuximide possibly increased by **SODIUM VALPROATE** and **VALPROIC ACID**
- Antimalarials: anticonvulsant effect of antiepileptics antagonised by ● **MEFLOQUINE**
- Antipsychotics: anticonvulsant effect of antiepileptics antagonised by ● **ANTIPSYCHOTICS** (convulsive threshold lowered)
- Orlistat: possible increased risk of convulsions when antiepileptics given with ● **ORLISTAT**

**Etodolac** *see* NSAIDs**Etomidate** *see* Anaesthetics, General**Etonogestrel** *see* Progestogens**Etoposide**

- Anticoagulants: etoposide possibly enhances anticoagulant effect of ● **COUMARINS**
- ▶ Antiepileptics: plasma concentration of etoposide possibly reduced by **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**
- ▶ Antifungals: plasma concentration of etoposide increased by **KETOCONAZOLE**
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- ▶ Atovaquone: plasma concentration of etoposide possibly increased by **ATOVAQUONE**
- ▶ Ciclosporin: plasma concentration of etoposide possibly increased by **CICLOSPORIN** (increased risk of toxicity)

**Etoricoxib** *see* NSAIDs**Etravirine**

- Antibacterials: etravirine reduces plasma concentration of ● **CLARITHROMYCIN** (but concentration of an active metabolite increased), also plasma concentration of etravirine increased; plasma concentration of both drugs reduced when etravirine given with ● **RIFABUTIN**; manufacturer of etravirine advises avoid concomitant use with **RIFAMPICIN**; etravirine possibly reduces plasma concentration of **BEDAQUILINE**—manufacturer of bedaquiline advises avoid concomitant use
- ▶ Antidepressants: manufacturer of etravirine advises avoid concomitant use with **ST JOHN'S WORT**
- ▶ Antiepileptics: manufacturer of etravirine advises avoid concomitant use with **CARBAMAZEPINE**, **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**
- ▶ Antimalarials: etravirine reduces plasma concentration of **ARTEMETHER WITH LUMEFANTRINE**
- Antivirals: effects of both drugs possibly reduced when etravirine given with **BOCEPREVIR**; avoidance of etravirine advised by manufacturer of **DACLATASVIR** (plasma concentration of daclatasvir possibly reduced); etravirine reduces the plasma concentration of ● **DOLUTEGRAVIR** (*see* under Dolutegravir, p. 557); plasma concentration of etravirine possibly reduced by ● **EFAVIRENZ** and ● **NEVIRAPINE**—



**Etravirine**

- **Antivirals** (continued)
  - avoid concomitant use; etravirine increases plasma concentration of ● **FOSAMPRENAVIR** (consider reducing dose of fosamprenavir); etravirine possibly reduces plasma concentration of ● **INDINAVIR**—avoid concomitant use; etravirine possibly reduces plasma concentration of **MARAVIROC**; avoidance of etravirine advised by manufacturer of **SIMEPREVIR**; plasma concentration of etravirine reduced by ● **TIPRANAVIR**, also plasma concentration of tipranavir increased (avoid concomitant use)
- **Cardiac Glycosides**: etravirine increases plasma concentration of **DIGOXIN**
- **Clopidogrel**: etravirine possibly reduces antiplatelet effect of ● **CLOPIDOGREL**
- **Cytotoxics**: etravirine possibly reduces plasma concentration of ● **BOSUTINIB**—manufacturer of bosutinib advises avoid concomitant use
- **Lipid-regulating Drugs**: etravirine possibly reduces plasma concentration of **ATORVASTATIN**
- **Orlistat**: absorption of etravirine possibly reduced by ● **ORLISTAT**
- **Sildenafil**: etravirine reduces plasma concentration of **SILDENAFIL**

**Everolimus**

- **ACE Inhibitors**: increased risk of angioedema when everolimus given with ● **ACE INHIBITORS**
- **Antibacterials**: plasma concentration of everolimus possibly increased by ● **CLARITHROMYCIN** and ● **TELITHROMYCIN**—manufacturer of everolimus advises avoid concomitant use; plasma concentration of everolimus increased by ● **ERYTHROMYCIN** (consider reducing the dose of everolimus—consult everolimus product literature); plasma concentration of everolimus reduced by ● **RIFAMPICIN** (avoid concomitant use or consider increasing the dose of everolimus—consult everolimus product literature)
- **Antidepressants**: plasma concentration of everolimus possibly reduced by **ST JOHN'S WORT**—manufacturer of everolimus advises avoid concomitant use
- **Antifungals**: plasma concentration of everolimus increased by ● **KETOCONAZOLE**—manufacturer of ketoconazole advises avoid concomitant use; plasma concentration of everolimus possibly increased by ● **ITRACONAZOLE**, ● **POSACONAZOLE** and ● **VORICONAZOLE**—manufacturer of everolimus advises avoid concomitant use
- **Antipsychotics**: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- **Antivirals**: plasma concentration of everolimus possibly increased by ● **ATAZANAVIR**, ● **DARUNAVIR**, ● **INDINAVIR**, ● **RITONAVIR** and ● **SAQUINAVIR**—manufacturer of everolimus advises avoid concomitant use
- **Calcium-channel Blockers**: plasma concentration of both drugs may increase when everolimus given with ● **VERAPAMIL** (consider reducing the dose of everolimus—consult everolimus product literature)
- **Ciclosporin**: plasma concentration of everolimus increased by ● **CICLOSPORIN** (consider reducing the dose of everolimus—consult everolimus product literature)
- **Cytotoxics**: plasma concentration of everolimus increased by ● **IMATINIB** (consider reducing the dose of everolimus—consult everolimus product literature)
- **Grapefruit Juice**: manufacturer of everolimus advises avoid concomitant use with **GRAPEFRUIT JUICE**

**Exemestane**

- **Antibacterials**: plasma concentration of exemestane possibly reduced by **RIFAMPICIN**

**Exenatide** see Antidiabetics

**Ezetimibe**

- **Anticoagulants**: ezetimibe possibly enhances anticoagulant effect of **COUMARINS**
- **Ciclosporin**: plasma concentration of both drugs may increase when ezetimibe given with ● **CICLOSPORIN**
- **Lipid-regulating Drugs**: ezetimibe increases plasma concentration of ● **ROSUVASTATIN**—adjust dose of rosuvastatin (consult product literature); increased risk of cholelithiasis

**Ezetimibe**

- **Lipid-regulating Drugs** (continued)
  - and gallbladder disease when ezetimibe given with **FIBRATES**—discontinue if suspected

**Famotidine** see Histamine H<sub>2</sub>-antagonists

**Fampridine**

- **Ulcer-healing Drugs**: manufacturer of fampridine advises avoid concomitant use with ● **CIMETIDINE**

**Febuxostat**

- **Azathioprine**: manufacturer of febuxostat advises avoid concomitant use with ● **AZATHIOPRINE**
- **Cytotoxics**: manufacturer of febuxostat advises avoid concomitant use with ● **MERCAPTOPYRINE**

**Felodipine** see Calcium-channel Blockers

**Fenofibrate** see Fibrates

**Fenopropfen** see NSAIDs

**Fentanyl** see Opioid Analgesics

**Ferrous Fumarate** see Iron salts

**Ferrous Gluconate** see Iron salts

**Ferrous Sulfate** see Iron salts

**Fesoterodine** see Antimuscarinics

**Fexofenadine** see Antihistamines

**Fibrates**

- **Antibacterials**: increased risk of myopathy when fibrates given with ● **DAPTOMYCIN** (preferably avoid concomitant use)
- **Anticoagulants**: fibrates enhance anticoagulant effect of ● **COUMARINS** and ● **PHENINDIONE**
- **Antidiabetics**: fibrates may improve glucose tolerance and have an additive effect with **INSULIN** or **SULFONYLUREAS**; gemfibrozil possibly enhances hypoglycaemic effect of **NATEGLINIDE**; increased risk of severe hypoglycaemia when gemfibrozil given with ● **REPAGLINIDE**—avoid concomitant use
- **Ciclosporin**: increased risk of renal impairment when bezafibrate or fenofibrate given with **CICLOSPORIN**
- **Colchicine**: possible increased risk of myopathy when fibrates given with ● **COLCHICINE**
- **Cytotoxics**: gemfibrozil increases plasma concentration of **DABRAFINIB**; gemfibrozil increases plasma concentration of ● **BEXAROTENE**—avoid concomitant use
- **Hormone Antagonists**: gemfibrozil increases plasma concentration of ● **ENZALUTAMIDE**—manufacturer of enzalutamide advises avoid concomitant use or halve dose of enzalutamide
- **Leukotriene Receptor Antagonists**: gemfibrozil increases plasma concentration of **MONTELUKAST**
- **Lipid-regulating Drugs**: increased risk of myopathy when gemfibrozil given with ● **ATORVASTATIN**, ● **FLUVASTATIN** or ● **PRAVASTATIN** (preferably avoid concomitant use); increased risk of myopathy when fibrates given with ● **ROSUVASTATIN** (see under Rosuvastatin, p. 180); possible increased risk of myopathy when bezafibrate given with ● **SIMVASTATIN** (see under Simvastatin, p. 181); possible increased risk of myopathy when ciprofibrate given with ● **SIMVASTATIN** (see under Simvastatin, p. 181); increased risk of myopathy when gemfibrozil given with ● **SIMVASTATIN** (avoid concomitant use); increased risk of cholelithiasis and gallbladder disease when fibrates given with **EZETIMIBE**—discontinue if suspected; increased risk of myopathy when fibrates given with ● **STATINS**; reduce maximum dose of fenofibrate when given with **STATINS**—see under Fenofibrate, p. 175

**Fidaxomicin**

- **Anti-arrhythmics**: manufacturer of fidaxomicin advises avoid concomitant use with **AMIODARONE** and **DRONEDARONE**
- **Antibacterials**: manufacturer of fidaxomicin advises avoid concomitant use with **CLARITHROMYCIN** and **ERYTHROMYCIN**
- **Antifungals**: manufacturer of fidaxomicin advises avoid concomitant use with **KETOCONAZOLE**
- **Calcium-channel Blockers**: manufacturer of fidaxomicin advises avoid concomitant use with **VERAPAMIL**
- **Ciclosporin**: manufacturer of fidaxomicin advises avoid concomitant use with **CICLOSPORIN**
- **Vaccines**: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Filgrastim**

- ▶ Cytotoxics: neutropenia possibly exacerbated when filgrastim given with **CAPECITABINE**, **FLUOROURACIL** or **TEGAFUR**

**Fingolimod**

- Anti-arrhythmics: possible increased risk of bradycardia when fingolimod given with ● **AMIODARONE**, ● **DISOPYRAMIDE** or ● **DRONEDARONE**
- ▶ Antidepressants: plasma concentration of fingolimod possibly reduced by **ST JOHN'S WORT**—manufacturer of fingolimod advises avoid concomitant use
- ▶ Antiepileptics: plasma concentration of fingolimod reduced by **CARBAMAZEPINE**
- Antifungals: plasma concentration of fingolimod increased by ● **KETOCONAZOLE**
- Beta-blockers: possible increased risk of bradycardia when fingolimod given with ● **BETA-BLOCKERS**
- Calcium-channel Blockers: possible increased risk of bradycardia when fingolimod given with ● **DILTIAZEM** or ● **VERAPAMIL**

**Flavoxate** see Antimuscarinics

**Flecainide**

- Anaesthetics, Local: increased myocardial depression when anti-arrhythmics given with **BUPIVACAINE**, **LEVOBUPIVACAINE**, **PRILICAIN** or **ROPIVACAINE**
- Anti-arrhythmics: increased myocardial depression when anti-arrhythmics given with other ● **ANTI-ARRHYTHMICS**; plasma concentration of flecainide increased by ● **AMIODARONE** (halve dose of flecainide)
- Antidepressants: plasma concentration of flecainide increased by **FLUOXETINE**; increased risk of ventricular arrhythmias when flecainide given with ● **TRICYCLICS**
- Antihistamines: increased risk of ventricular arrhythmias when flecainide given with ● **MIZOLASTINE**—avoid concomitant use
- Antimalarials: avoidance of flecainide advised by manufacturer of ● **ARTEMETHER WITH LUMEFANTRINE** (risk of ventricular arrhythmias); plasma concentration of flecainide increased by ● **QUININE**
- Antimuscarinics: increased risk of ventricular arrhythmias when flecainide given with ● **TOLTERODINE**
- Antipsychotics: increased risk of ventricular arrhythmias when anti-arrhythmics that prolong the QT interval given with ● **ANTIPSYCHOTICS** that prolong the QT interval; increased risk of arrhythmias when flecainide given with ● **CLOZAPINE**
- Antivirals: plasma concentration of flecainide possibly increased by ● **FOSAMPRENAVIR**, ● **INDINAVIR**, ● **LOPINAVIR** and ● **RITONAVIR** (increased risk of ventricular arrhythmias—avoid concomitant use); increased risk of ventricular arrhythmias when flecainide given with ● **SAQUINAVIR**—avoid concomitant use; caution with flecainide advised by manufacturer of ● **TELAPREVIR** (risk of ventricular arrhythmias)
- Beta-blockers: increased risk of myocardial depression and bradycardia when flecainide given with ● **BETA-BLOCKERS**; increased myocardial depression when anti-arrhythmics given with ● **BETA-BLOCKERS**
- Calcium-channel Blockers: increased risk of myocardial depression and asystole when flecainide given with ● **VERAPAMIL**

- Diuretics: increased cardiac toxicity with flecainide if hypokalaemia occurs with ● **ACETAZOLAMIDE**, ● **LOOP DIURETICS** or ● **THIAZIDES AND RELATED DIURETICS**

- ▶ Ulcer-healing Drugs: metabolism of flecainide inhibited by **CIMETIDINE** (increased plasma concentration)

**Flucloxacillin** see Penicillins

**Fluconazole** see Antifungals, Triazole

**Flucytosine**

- ▶ Antifungals: renal excretion of flucytosine decreased and cellular uptake increased by **AMPHOTERICIN** (toxicity possibly increased)
- ▶ Cytotoxics: plasma concentration of flucytosine possibly reduced by **CYTARABINE**

**Fludarabine**

- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Cytotoxics: fludarabine increases intracellular concentration of **CYTARABINE**; increased pulmonary toxicity when

**Fludarabine**

- Cytotoxics (continued)
  - fludarabine given with ● **PENTOSTATIN** (unacceptably high incidence of fatalities)
- ▶ Dipyridamole: effects of fludarabine possibly reduced by **DIPYRIDAMOLE**

**Fludrocortisone** see Corticosteroids

**Fluorides**

- ▶ Calcium Salts: absorption of fluorides reduced by **CALCIUM SALTS**

**Fluorouracil**

- ▶ Antibacterials: metabolism of fluorouracil inhibited by **METRONIDAZOLE** (increased toxicity)
- Anticoagulants: fluorouracil enhances anticoagulant effect of ● **COUMARINS**
- ▶ Antiepileptics: fluorouracil possibly inhibits metabolism of **FOSPHENYTOIN** and **PHENYTOIN** (increased risk of toxicity)
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- ▶ Filgrastim: neutropenia possibly exacerbated when fluorouracil given with **FILGRASTIM**
- Folate: toxicity of fluorouracil increased by ● **FOLIC ACID**—avoid concomitant use
- ▶ Lipegfilgrastim: neutropenia possibly exacerbated when fluorouracil given with **LIPEGFILGRASTIM**
- ▶ Pegfilgrastim: neutropenia possibly exacerbated when fluorouracil given with **PEGFILGRASTIM**
- Tempoporphin: increased skin photosensitivity when *topical* fluorouracil used with ● **TEMOPORFIN**
- ▶ Ulcer-healing Drugs: metabolism of fluorouracil inhibited by **CIMETIDINE** (increased plasma concentration)

**Fluoxetine** see Antidepressants, SSRI

**Flupentixol** see Antipsychotics

**Fluphenazine** see Antipsychotics

**Flurazepam** see Anxiolytics and Hypnotics

**Flurbiprofen** see NSAIDs

**Flutamide**

- Anticoagulants: flutamide enhances anticoagulant effect of ● **COUMARINS**

**Fluticasone** see Corticosteroids

**Fluvastatin** see Statins

**Flvoxamine** see Antidepressants, SSRI

**Folates**

- ▶ Aminosalicylates: absorption of folic acid possibly reduced by **SULFASALAZINE**
- ▶ Antacids: absorption of folic acid possibly reduced by **ANTACIDS** (manufacturer of folic acid advises give at least 2 hours apart)
- ▶ Antiepileptics: folates possibly reduce plasma concentration of **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**
- Cytotoxics: folic acid increases toxicity of ● **CAPECITABINE**, ● **FLUOROURACIL** and ● **TEGAFUR**—avoid concomitant use; avoidance of folates advised by manufacturer of ● **RALTITREXED**

**Folic Acid** see Folate

**Folinic Acid** see Folate

**Fondaparinux**

- Analgesics: increased risk of haemorrhage when anticoagulants given with *intravenous* ● **DICLOFENAC** (avoid concomitant use, including low-dose heparins); increased risk of haemorrhage when anticoagulants given with ● **KETOROLAC** (avoid concomitant use, including low-dose heparins)

- Anticoagulants: increased risk of haemorrhage when other anticoagulants given with ● **APIXABAN**, ● **DABIGATRAN** and ● **RIVAROXABAN** (avoid concomitant use except when switching with other anticoagulants or using heparin to maintain catheter patency)

**Formoterol** see Sympathomimetics, Beta<sub>2</sub>

**Fosamprenavir**

**NOTE** Fosamprenavir is a prodrug of amprenavir

- ▶ Analgesics: fosamprenavir reduces plasma concentration of **METHADONE**
- Anti-arrhythmics: fosamprenavir possibly increases plasma concentration of ● **AMIODARONE**, ● **FLECAINIDE** and ● **PROPAFENONE** (increased risk of ventricular arrhythmias—

**Fosamprenavir**

- Anti-arrhythmics (continued)
  - avoid concomitant use); fosamprenavir possibly increases plasma concentration of ● **LIDOCAINE**—avoid concomitant use
- Antibacterials: fosamprenavir increases plasma concentration of ● **RIFABUTIN** (reduce dose of rifabutin); plasma concentration of fosamprenavir significantly reduced by ● **RIFAMPICIN**—avoid concomitant use; avoidance of concomitant fosamprenavir in severe renal and hepatic impairment advised by manufacturer of ● **TELITHROMYCIN**
- Anticoagulants: avoidance of fosamprenavir advised by manufacturer of **APIXABAN** and **RIVAROXABAN**; fosamprenavir may enhance or reduce anticoagulant effect of **COUMARINS**
- Antidepressants: plasma concentration of fosamprenavir reduced by ● **ST JOHN'S WORT**—avoid concomitant use
- Antiepileptics: plasma concentration of fosamprenavir possibly reduced by **CARBAMAZEPINE**, **PHENOBARBITAL** and **PRIMIDONE**
- Antifungals: fosamprenavir increases plasma concentration of **KETOCONAZOLE** (also plasma concentration of fosamprenavir possibly increased); plasma concentration of both drugs may increase when fosamprenavir given with **ITRACONAZOLE**; fosamprenavir possibly reduces plasma concentration of **POSACONAZOLE**
- Antimalarials: caution with fosamprenavir advised by manufacturer of **ARTEMETHER WITH LUMEFANTRINE**; fosamprenavir possibly increases plasma concentration of ● **QUININE** (increased risk of toxicity)
- Antimuscarinics: avoidance of fosamprenavir advised by manufacturer of **DARIFENACIN** and **TOLTERODINE**
- Antipsychotics: fosamprenavir possibly increases plasma concentration of ● **ARIPIPRAZOLE** (reduce dose of aripiprazole—consult aripiprazole product literature); fosamprenavir increases plasma concentration of ● **PIMOZIDE** (increased risk of ventricular arrhythmias—avoid concomitant use); fosamprenavir possibly increases plasma concentration of ● **QUETIAPINE**—manufacturer of quetiapine advises avoid concomitant use
- Antivirals: manufacturer of fosamprenavir advises avoid concomitant use with ● **BOCEPREVIR** and ● **ALTEGRAVIR**; fosamprenavir reduces plasma concentration of ● **DOLUTEGRAVIR**; plasma concentration of fosamprenavir increased by ● **ETRAVIRINE** (consider reducing dose of fosamprenavir); plasma concentration of fosamprenavir reduced by **LOPINAVIR**, effect on lopinavir plasma concentration not predictable—avoid concomitant use; plasma concentration of fosamprenavir reduced by ● **MARAVIROC**—avoid concomitant use; plasma concentration of fosamprenavir possibly reduced by **NEVIRAPINE**—avoid unboosted fosamprenavir; manufacturers advise avoid concomitant use of fosamprenavir with ● **TELAPREVIR**; plasma concentration of fosamprenavir reduced by ● **TIPRANAVIR**
- Anxiolytics and Hypnotics: fosamprenavir possibly increases plasma concentration of ● **MIDAZOLAM** (risk of prolonged sedation—avoid concomitant use of oral midazolam)
- Avanafil: fosamprenavir possibly increases plasma concentration of ● **AVANAFIL**—see under Avanafil, p. 698
- Ciclosporin: fosamprenavir increases plasma concentration of ● **CICLOSPORIN**
- Cytotoxics: fosamprenavir possibly increases the plasma concentration of ● **BOSUTINIB**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib; fosamprenavir possibly increases the plasma concentration of ● **IBRUTINIB**—reduce dose of ibrutinib (see under Ibrutinib, p. 809)
- Dapoxetine: manufacturer of dapoxetine advises dose reduction when fosamprenavir given with **DAPOXETINE** (see under Dapoxetine, p. 705)
- Ergot Alkaloids: increased risk of ergotism when fosamprenavir given with ● **ERGOTAMINE**—avoid concomitant use
- Lipid-regulating Drugs: possible increased risk of myopathy when fosamprenavir given with **ATORVASTATIN**; possible increased risk of myopathy when fosamprenavir given with ● **ROSUVASTATIN**—manufacturer of rosuvastatin advises avoid concomitant use; possible increased risk of myopathy when fosamprenavir given with ● **SIMVASTATIN**—avoid concomitant

**Fosamprenavir**

- Lipid-regulating Drugs (continued)
  - use; avoidance of fosamprenavir advised by manufacturer of ● **LOMITAPIDE** (plasma concentration of lomitapide possibly increased)
- Orlistat: absorption of fosamprenavir possibly reduced by ● **ORLISTAT**
- Ranolazine: fosamprenavir possibly increases plasma concentration of ● **RANOLAZINE**—manufacturer of ranolazine advises avoid concomitant use
- Sildenafil: fosamprenavir possibly increases plasma concentration of **SILDENAFIL**
- Tacrolimus: fosamprenavir increases plasma concentration of ● **TACROLIMUS**
- Tadalafil: fosamprenavir possibly increases plasma concentration of **TADALAFIL**
- Vardenafil: fosamprenavir possibly increases plasma concentration of **VARDENAFIL**

**Fosaprepitant**

- Antibacterials: plasma concentration of fosaprepitant possibly increased by **CLARITHROMYCIN** and **TELITHROMYCIN**; plasma concentration of fosaprepitant reduced by **RIFAMPICIN**
- Anticoagulants: fosaprepitant possibly reduces anticoagulant effect of **WARFARIN**
- Antidepressants: manufacturer of fosaprepitant advises avoid concomitant use with ● **ST JOHN'S WORT**
- Antidiabetics: fosaprepitant reduces plasma concentration of **TOLBUTAMIDE**
- Antiepileptics: plasma concentration of fosaprepitant possibly reduced by **CARBAMAZEPINE**, **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**
- Antifungals: plasma concentration of fosaprepitant increased by **KETOCONAZOLE**
- Antipsychotics: manufacturer of fosaprepitant advises avoid concomitant use with ● **PIMOZIDE**
- Antivirals: plasma concentration of fosaprepitant possibly increased by **RITONAVIR**
- Anxiolytics and Hypnotics: fosaprepitant increases plasma concentration of **MIDAZOLAM** (risk of prolonged sedation)
- Avanafil: fosaprepitant possibly increases plasma concentration of **AVANAFIL**
- Calcium-channel Blockers: plasma concentration of both drugs may increase when fosaprepitant given with **DILTIAZEM**
- Corticosteroids: fosaprepitant inhibits metabolism of **DEXAMETHASONE** and **METHYLPREDNISOLONE** (reduce dose of dexamethasone and methylprednisolone)
- Cytotoxics: fosaprepitant possibly increases the plasma concentration of ● **BOSUTINIB**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib; fosaprepitant possibly increases plasma concentration of **IBRUTINIB**
- Lipid-regulating Drugs: separating administration from fosaprepitant by 12 hours advised by manufacturer of **LOMITAPIDE**
- Oestrogens: fosaprepitant possibly causes contraceptive failure of hormonal contraceptives containing ● **OESTROGENS** (alternative contraception recommended)
- Progestogens: fosaprepitant possibly causes contraceptive failure of hormonal contraceptives containing ● **PROGESTOGENS** (alternative contraception recommended)

**Foscarnet**

- Pentamidine Isetionate: increased risk of hypocalcaemia when foscarnet given with *parenteral* ● **PENTAMIDINE ISETIONATE**

**Fosfomycin**

- Metoclopramide: plasma concentration of fosfomycin reduced by **METOCLOPRAMIDE**
- Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Fosinopril** see ACE Inhibitors**Fosphenytoin**

- Alcohol: plasma concentration of fosphenytoin possibly reduced by chronic heavy consumption of **ALCOHOL**
- Aminophylline: plasma concentration of both drugs reduced when fosphenytoin given with ● **AMINOPHYLLINE**
- Analgesics: excretion of fosphenytoin possibly reduced by **ACETAMINACIN** (increased risk of toxicity); fosphenytoin possibly

**Fosphenytoin**

- Analgesics (continued)
  - accelerates metabolism of **FENTANYL** (reduced effect); fosphenytoin accelerates metabolism of **METHADONE** (reduced effect and risk of withdrawal effects); fosphenytoin possibly increases risk of • **PETHIDINE** toxicity; effects of fosphenytoin enhanced by **ASPIRIN**; fosphenytoin possibly accelerates metabolism of **PARACETAMOL** (also isolated reports of hepatotoxicity)
- Antacids: absorption of fosphenytoin reduced by **ANTACIDS**
- Anthelmintics: fosphenytoin reduces plasma concentration of
  - **ALBENDAZOLE** and • **PRAZIQUANTEL**—consider increasing albendazole and praziquantel dose when given for systemic infections; plasma concentration of fosphenytoin possibly increased by **LEVAMISOLE**
- Anti-arrhythmics: metabolism of fosphenytoin inhibited by
  - **AMIODARONE** (increased plasma concentration); fosphenytoin reduces plasma concentration of **DISOPYRAMIDE**; fosphenytoin possibly reduces plasma concentration of • **DRONEDARONE**—avoid concomitant use
- Antibacterials: metabolism of fosphenytoin inhibited by
  - CLARITHROMYCIN** (increased plasma concentration); metabolism of fosphenytoin possibly inhibited by **METRONIDAZOLE** (increased plasma concentration); plasma concentration of fosphenytoin increased or decreased by **CIPROFLOXACIN**; fosphenytoin accelerates metabolism of **DOXYCYCLINE** (reduced plasma concentration); fosphenytoin possibly reduces plasma concentration of • **BEDAQUILINE**—manufacturer of bedaquiline advises avoid concomitant use; plasma concentration of fosphenytoin increased by • **CHLORAMPHENICOL** (increased risk of toxicity); metabolism of fosphenytoin possibly inhibited by **ISONIAZID** (increased risk of toxicity); metabolism of fosphenytoin accelerated by • **RIFAMYCINS** (reduced plasma concentration); plasma concentration of fosphenytoin possibly increased by **SULFONAMIDES**; fosphenytoin reduces plasma concentration of • **TELITHROMYCIN** (avoid during and for 2 weeks after fosphenytoin); plasma concentration of fosphenytoin increased by • **TRIMETHOPRIM** (also increased antifolate effect)
- Anticoagulants: fosphenytoin possibly reduces plasma concentration of • **APIXABAN**; fosphenytoin accelerates metabolism of • **COUMARINS** (possibility of reduced anticoagulant effect, but enhancement also reported); fosphenytoin possibly reduces plasma concentration of **DABIGATRAN**—manufacturer of dabigatran advises avoid concomitant use; fosphenytoin possibly reduces plasma concentration of • **RIVAROXABAN**—manufacturer of rivaroxaban advises monitor for signs of thrombosis
- Antidepressants: plasma concentration of fosphenytoin increased by • **FLUOXETINE** and • **FLUVOXAMINE**; fosphenytoin reduces plasma concentration of • **MIANSERIN**, **MIRTAZAPINE** and **PAROXETINE**; plasma concentration of fosphenytoin possibly increased by **SERTRALINE**, also plasma concentration of sertraline possibly reduced; anticonvulsant effect of antiepileptics possibly antagonised by **MAOIs** and • **TRICYCLIC-RELATED ANTIDEPRESSANTS** (convulsive threshold lowered); anticonvulsant effect of antiepileptics antagonised by • **SSRIs** and • **TRICYCLICS** (convulsive threshold lowered); plasma concentration of fosphenytoin possibly reduced by • **ST JOHN'S WORT**—avoid concomitant use; fosphenytoin possibly reduces plasma concentration of • **TRICYCLICS**
- Antidiabetics: plasma concentration of fosphenytoin transiently increased by **TOLBUTAMIDE** (possibility of toxicity)
- Antiepileptics: plasma concentration of both drugs often reduced when fosphenytoin given with **CARBAMAZEPINE**, also plasma concentration of fosphenytoin may be increased; fosphenytoin reduces plasma concentration of **ESLICARBAMAZEPINE**, also plasma concentration of fosphenytoin increased; plasma concentration of fosphenytoin possibly increased by • **ETHOSUXIMIDE**, also plasma concentration of ethosuximide possibly reduced; fosphenytoin reduces plasma concentration of **LAMOTRIGINE**, **TIAGABINE** and **ZONISAMIDE**; plasma concentration of fosphenytoin increased by **OXCARBAZEPINE**, also plasma concentration of an active metabolite of oxcarbazepine reduced; fosphenytoin reduces

**Fosphenytoin**

- Antiepileptics (continued)
  - plasma concentration of • **PERAMPANEL** (see under Perampanel, p. 398); fosphenytoin often increases plasma concentration of **PHENOBARBITAL** and **PRIMIDONE**, plasma concentration of fosphenytoin often reduced but may be increased; fosphenytoin possibly reduces plasma concentration of **RETIGABINE**; fosphenytoin possibly reduces plasma concentration of **RUFINAMIDE**, also plasma concentration of fosphenytoin possibly increased; plasma concentration of fosphenytoin increased or possibly reduced when given with **SODIUM VALPROATE** and **VALPROIC ACID**, also plasma concentration of sodium valproate and valproic acid reduced; plasma concentration of fosphenytoin increased by • **STIRIPENTOL**; plasma concentration of fosphenytoin increased by • **TOPIRAMATE** (also plasma concentration of topiramate reduced); plasma concentration of fosphenytoin reduced by **VIGABATRIN**
- Antifungals: fosphenytoin reduces plasma concentration of • **KETOCONAZOLE** and • **POSACONAZOLE**; anticonvulsant effect of fosphenytoin enhanced by • **MICONAZOLE** (plasma concentration of fosphenytoin increased); plasma concentration of fosphenytoin increased by • **FLUCONAZOLE** (consider reducing dose of fosphenytoin); fosphenytoin reduces plasma concentration of • **ITRACONAZOLE**—avoid concomitant use; plasma concentration of fosphenytoin increased by • **VORICONAZOLE**, also fosphenytoin reduces plasma concentration of voriconazole (increase dose of voriconazole and also monitor for fosphenytoin toxicity); fosphenytoin possibly reduces plasma concentration of **CASPOFUNGIN**—consider increasing dose of caspofungin
- Antimalarials: avoidance of fosphenytoin advised by manufacturer of **ARTENIMOL WITH PIPERAQUINE**; anticonvulsant effect of antiepileptics antagonised by • **MEFLOQUINE**; anticonvulsant effect of fosphenytoin antagonised by • **PYRIMETHAMINE**, also increased antifolate effect
- Antipsychotics: anticonvulsant effect of antiepileptics antagonised by • **ANTIPSYCHOTICS** (convulsive threshold lowered); fosphenytoin reduces plasma concentration of **HALOPERIDOL**; plasma concentration of fosphenytoin possibly increased or decreased by **CHLORPROMAZINE**; fosphenytoin possibly reduces plasma concentration of • **ARIPRAZOLE** (avoid concomitant use or consider increasing the dose of aripiprazole—consult aripiprazole product literature); fosphenytoin accelerates metabolism of **CLOZAPINE** and **QUETIAPINE** (reduced plasma concentration); fosphenytoin possibly reduces plasma concentration of • **LURASIDONE**—avoid concomitant use
- Antivirals: fosphenytoin possibly reduces plasma concentration of **ABACAVIR**, **DARUNAVIR**, **LOPINAVIR** and **SAQUINAVIR**; avoidance of fosphenytoin advised by manufacturer of • **BOCEPREVIR** and • **RILPIVIRINE** (plasma concentration of boceprevir and rilpivirine possibly reduced); fosphenytoin possibly reduces plasma concentration of • **DACLATASVIR** and • **SIMEPREVIR**—manufacturer of daclatasvir and simeprevir advises avoid concomitant use; avoidance of fosphenytoin advised by manufacturer of **DOLUTEGRAVIR**, • **ELVITEGRAVIR**, **ETRAVIRINE**, **SOFOSBUVIR** and • **TELAPREVIR**; fosphenytoin possibly reduces plasma concentration of • **INDINAVIR**, also plasma concentration of fosphenytoin possibly increased; fosphenytoin possibly reduces plasma concentration of **RITONAVIR**, also plasma concentration of fosphenytoin possibly affected; plasma concentration of fosphenytoin increased or decreased by **ZIDOVUDINE**
- Anxiolytics and Hypnotics: fosphenytoin often reduces plasma concentration of **CLONAZEPAM**; plasma concentration of fosphenytoin increased or decreased by **DIAZEPAM**; plasma concentration of fosphenytoin possibly increased or decreased by **BENZODIAZEPINES**
- Aprepitant: fosphenytoin possibly reduces plasma concentration of **APREPITANT**
- Bupropion: fosphenytoin reduces plasma concentration of **BUPROPION**
- Caffeine citrate: fosphenytoin reduces plasma concentration of **CAFFEINE CITRATE**



**Fosphenytoin** (continued)

- Calcium-channel Blockers: fosphenytoin reduces effects of **FELODIPINE** and **VERAPAMIL**; avoidance of fosphenytoin advised by manufacturer of **ISRADIPINE**; avoidance of fosphenytoin advised by manufacturer of **NIMODIPINE** (plasma concentration of nimodipine possibly reduced); plasma concentration of fosphenytoin increased by **● DILTIAZEM** but also effect of diltiazem reduced
- Cannabis Extract: fosphenytoin possibly reduces plasma concentration of **● CANNABIS EXTRACT**—manufacturer of cannabis extract advises avoid concomitant use
- Cardiac Glycosides: fosphenytoin possibly reduces plasma concentration of **DIGOXIN**
- Ciclosporin: fosphenytoin accelerates metabolism of **● CICLOSPORIN** (reduced plasma concentration)
- Cobiscat: fosphenytoin possibly reduces plasma concentration of **● COBISCAT**—manufacturer of cobiscat advises avoid concomitant use
- Corticosteroids: fosphenytoin accelerates metabolism of **● CORTICOSTEROIDS** (reduced effect)
- Cytotoxics: fosphenytoin possibly reduces plasma concentration of **BUSULFAN**, **ERIBULIN** and **ETOPOSIDE**; metabolism of fosphenytoin possibly inhibited by **CAPECITABINE**, **FLUOROURACIL** and **TEGAFUR** (increased risk of toxicity); fosphenytoin increases antifolate effect of **METHOTREXATE**; plasma concentration of fosphenytoin possibly reduced by **CISPLATIN**; fosphenytoin possibly decreases plasma concentration of **AXITINIB** (increase dose of axitinib—consult axitinib product literature); fosphenytoin possibly reduces plasma concentration of **BORTEZOMIB**, **● BOSUTINIB**, **CRIZOTINIB**, **● IBRUTINIB**, **● IDELALISIB** and **PONATINIB**—manufacturer of borteomib, bosutinib, crizotinib, ibritinib, idelalisib and ponatinib advises avoid concomitant use; fosphenytoin possibly reduces plasma concentration of **● CABOZANTINIB**—avoid concomitant use; avoidance of fosphenytoin advised by manufacturer of **● CABAZITAXEL**, **DABRAFENIB**, **GEFITINIB**, **● LAPATINIB** and **VEMURAFENIB**; avoidance of fosphenytoin advised by manufacturer of **DASATINIB** and **● VISMODEGIB** (plasma concentration of dasatinib and vismodegib possibly reduced); fosphenytoin reduces plasma concentration of **● IMATINIB**—avoid concomitant use; fosphenytoin reduces plasma concentration of **IRINOTECAN** and its active metabolite; manufacturer of procarbazine advises possible increased risk of hypersensitivity reactions when fosphenytoin given with **PROCARBAZINE**
- Dextrazoxane: absorption of fosphenytoin possibly reduced by **● DEXRAZOXANE**
- Diazoxide: plasma concentration of fosphenytoin reduced by **DIAZOXIDE**, also effect of diazoxide may be reduced
- Disulfiram: metabolism of fosphenytoin inhibited by **● DISULFIRAM** (increased risk of toxicity)
- Diuretics: plasma concentration of fosphenytoin possibly increased by **● ACETAZOLAMIDE**; fosphenytoin antagonises effects of **FUROSEMIDE**; fosphenytoin reduces plasma concentration of **● EPLERENONE**—avoid concomitant use; increased risk of osteomalacia when fosphenytoin given with **CARBONIC ANHYDRASE INHIBITORS**
- Dopaminergics: fosphenytoin possibly reduces effects of **CO-BENELDOPA**, **CO-CARELDOPA** and **LEVODOPA**
- Enteral Foods: absorption of fosphenytoin possibly reduced by **ENTERAL FEEDS**
- Folate: plasma concentration of fosphenytoin possibly reduced by **FOLATES**
- Fosaprepitant: fosphenytoin possibly reduces plasma concentration of **FOSAPREPITANT**
- Hormone Antagonists: fosphenytoin possibly reduces plasma concentration of **● ABIRATERONE**—manufacturer of abiraterone advises avoid concomitant use; fosphenytoin possibly accelerates metabolism of **TOREMIFENE**
- 5HT<sub>2</sub>-receptor Antagonists: fosphenytoin accelerates metabolism of **ONDANSETRON** (reduced effect)
- Ivacaftor: fosphenytoin possibly reduces plasma concentration of **● IVACAFTOR**—manufacturer of ivacaftor advises avoid concomitant use

**Fosphenytoin** (continued)

- Leflunomide: plasma concentration of fosphenytoin possibly increased by **LEFLUNOMIDE**
- Lipid-regulating Drugs: absorption of fosphenytoin possibly reduced by **COLESEVELAM**; combination of fosphenytoin with **FLUVASTATIN** may increase plasma concentration of either drug (or both)
- Lithium: neurotoxicity may occur when fosphenytoin given with **LITHIUM** without increased plasma concentration of lithium
- Macitentan: avoidance of fosphenytoin advised by manufacturer of **MACITENTAN**
- Modafinil: plasma concentration of fosphenytoin possibly increased by **MODAFINIL**
- Muscle Relaxants: *long-term use* of fosphenytoin reduces effects of **● NON-DEPOLARISING MUSCLE RELAXANTS** (but *acute use* of fosphenytoin might increase effects of non-depolarising muscle relaxants)
- Oestrogens: fosphenytoin accelerates metabolism of **● OESTROGENS** (reduced contraceptive effect with combined oral contraceptives, contraceptive patches, and vaginal rings—see Contraceptive Interactions in BNF)
- Orlistat: possible increased risk of convulsions when antiepileptics given with **● ORLISTAT**
- Progestogens: fosphenytoin accelerates metabolism of **● PROGESTOGENS** (reduced contraceptive effect with combined oral contraceptives, progestogen-only oral contraceptives, contraceptive patches, vaginal rings, etonogestrel-releasing implant, and emergency hormonal contraception—see Contraceptive Interactions in BNF)
- Roflumilast: fosphenytoin possibly inhibits effects of **ROFLUMILAST** (manufacturer of roflumilast advises avoid concomitant use)
- Sulfapyrazone: plasma concentration of fosphenytoin increased by **● SULFINPYRAZONE**
- Sympathomimetics: plasma concentration of fosphenytoin increased by **METHYLPHENIDATE**
- Tacrolimus: fosphenytoin reduces plasma concentration of **TACROLIMUS**, also plasma concentration of fosphenytoin possibly increased
- Theophylline: plasma concentration of both drugs reduced when fosphenytoin given with **● THEOPHYLLINE**
- Thyroid Hormones: fosphenytoin accelerates metabolism of **THYROID HORMONES** (may increase requirements in hypothyroidism), also plasma concentration of fosphenytoin possibly increased
- Tibolone: fosphenytoin accelerates metabolism of **TIBOLONE**
- Ticagrelor: fosphenytoin possibly reduces plasma concentration of **TICAGRELOR**
- Ulcer-healing Drugs: metabolism of fosphenytoin inhibited by **● CIMETIDINE** (increased plasma concentration); effects of fosphenytoin enhanced by **● ESOMEPRAZOLE**; effects of fosphenytoin possibly enhanced by **● OMEPRAZOLE**; absorption of fosphenytoin reduced by **● SUCRALFATE**
- Ulipristal: avoidance of fosphenytoin advised by manufacturer of **● ULIPRISTAL** (contraceptive effect of ulipristal possibly reduced)
- Vaccines: effects of fosphenytoin enhanced by **INFLUENZA VACCINE**
- Vitamins: fosphenytoin possibly increases requirements for **ALFACALCIDOL**, **CALCITRIOL**, **COLECALCIFEROL**, **DIHYDROTACHYSTEROL**, **ERGOCALCIFEROL**, **PARICALCITOL** or **VITAMIN D**

**Frovatriptan** see 5HT<sub>1</sub>-receptor Agonists (under HT)

**Furosemide** see Diuretics

**Fusidic Acid**

- Antivirals: plasma concentration of both drugs increased when fusidic acid given with **● RITONAVIR**—avoid concomitant use; plasma concentration of both drugs may increase when fusidic acid given with **SAQUINAVIR**
- Lipid-regulating Drugs: risk of myopathy and rhabdomyolysis when fusidic acid given with **● STATINS**—avoid concomitant use and for 7 days after last fusidic acid dose
- Sugammadex: fusidic acid possibly reduces response to **SUGAMMADEX**

**Fusidic Acid** (continued)

- ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Gabapentin**

- ▶ Analgesics: bioavailability of gabapentin increased by **MORPHINE**
- ▶ Antacids: absorption of gabapentin reduced by **ANTACIDS**
- Antidepressants: anticonvulsant effect of antiepileptics possibly antagonised by ● **MAOIS** and ● **TRICYCLIC-RELATED ANTIDEPRESSANTS** (convulsive threshold lowered); anticonvulsant effect of antiepileptics antagonised by ● **SSRIS** and ● **TRICYCLICS** (convulsive threshold lowered)
- Antimalarials: anticonvulsant effect of antiepileptics antagonised by ● **MEFLOQUINE**
- Antipsychotics: anticonvulsant effect of antiepileptics antagonised by ● **ANTIPSYCHOTICS** (convulsive threshold lowered)
- Orlistat: possible increased risk of convulsions when antiepileptics given with ● **ORLISTAT**

**Galantamine** see Parasympathomimetics

**Ganciclovir**

- NOTE** Increased risk of myelosuppression with other myelosuppressive drugs—consult product literature
- Antibacterials: increased risk of convulsions when ganciclovir given with ● **IMIPENEM WITH CILASTATIN**
  - Antivirals: ganciclovir possibly increases plasma concentration of **DIDANOSINE**; profound myelosuppression when ganciclovir given with ● **ZIDOVUDINE** (if possible avoid concomitant administration, particularly during initial ganciclovir therapy)
  - ▶ Mycophenolate: plasma concentration of ganciclovir possibly increased by **MYCOPHENOLATE**, also plasma concentration of inactive metabolite of mycophenolate possibly increased
  - ▶ Tacrolimus: possible increased risk of nephrotoxicity when ganciclovir given with **TACROLIMUS**

**Gefitinib**

- Antibacterials: plasma concentration of gefitinib reduced by ● **RIFAMPICIN**—avoid concomitant use
- Anticoagulants: gefitinib possibly enhances anticoagulant effect of ● **WARFARIN**
- ▶ Antidepressants: manufacturer of gefitinib advises avoid concomitant use with **ST JOHN'S WORT**
- ▶ Antiepileptics: manufacturer of gefitinib advises avoid concomitant use with **CARBAMAZEPINE**, **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**
- ▶ Antifungals: plasma concentration of gefitinib increased by **ITRACONAZOLE**
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Antivirals: avoidance of gefitinib advised by manufacturer of ● **BOCEPREVIR**
- Ulcer-healing Drugs: plasma concentration of gefitinib reduced by ● **RANITIDINE**

**Gemcitabine**

- ▶ Anticoagulants: gemcitabine possibly enhances anticoagulant effect of **WARFARIN**
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)

**Gemeprost** see Prostaglandins

**Gemfibrozil** see Fibrates

**Gentamicin** see Aminoglycosides

**Gestodene** see Progestogens

**Glibenclamide** see Antidiabetics

**Gliclazide** see Antidiabetics

**Glimepiride** see Antidiabetics

**Glipizide** see Antidiabetics

**Glucosamine**

- Anticoagulants: glucosamine enhances anticoagulant effect of ● **WARFARIN** (avoid concomitant use)

**Glyceryl Trinitrate** see Nitrates

**Glycopyrronium** see Antimuscarinics

**Golimumab**

- Abatacept: avoid concomitant use of golimumab with ● **ABATACEPT**

**Golimumab** (continued)

- Anakinra: avoid concomitant use of golimumab with ● **ANAKINRA**
  - Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
  - Vaccines: risk of generalised infections when monoclonal antibodies given with live ● **VACCINES**—avoid concomitant use
- Granisetron** see **5HT<sub>3</sub>-receptor Antagonists** (under HT)

**Grapefruit Juice**

- Aliskiren: grapefruit juice reduces plasma concentration of ● **ALISKIREN**—avoid concomitant use
- ▶ Anthelmintics: grapefruit juice increases plasma concentration of active metabolite of **ALBENDAZOLE**; grapefruit juice increases plasma concentration of **PRAZIQUANTEL**
- Anti-arrhythmics: grapefruit juice increases plasma concentration of **AMIODARONE**; grapefruit juice increases plasma concentration of ● **DRONEDARONE**—avoid concomitant use
- ▶ Antidepressants: grapefruit juice possibly increases plasma concentration of **SERTRALINE**
- ▶ Antihistamines: grapefruit juice reduces plasma concentration of **BILASTINE**
- ▶ Antimalarials: grapefruit juice possibly increases plasma concentration of **ARTEMETHER WITH LUMEFANTRINE**; avoidance of grapefruit juice advised by manufacturer of **ARTENIMOL WITH PIPERAQUINE**
- Antipsychotics: avoidance of grapefruit juice advised by manufacturer of **LURASIDONE** and **PIMOZIDE**; grapefruit juice possibly increases plasma concentration of ● **QUETIAPINE**—manufacturer of quetiapine advises avoid concomitant use
- ▶ Antivirals: grapefruit juice possibly increases plasma concentration of **EFAVIRENZ**
- ▶ Anxiolytics and Hypnotics: grapefruit juice possibly increases plasma concentration of **oral MIDAZOLAM**; grapefruit juice increases plasma concentration of **BUSPIRONE**
- ▶ Avanafil: grapefruit juice possibly increases plasma concentration of **AVANAFIL**—manufacturer of avanafil advises avoid grapefruit juice for 24 hours before avanafil
- ▶ Calcium-channel Blockers: grapefruit juice possibly increases plasma concentration of **AMLODIPINE**; grapefruit juice increases plasma concentration of **FELODIPINE**, **ISRADIPINE**, **LACIDIPINE**, **LERCANIDIPINE**, **NICARDIPINE**, **NIFEDIPINE**, **NIMODIPINE** and **VERAPAMIL**
- Ciclosporin: grapefruit juice increases plasma concentration of ● **CICLOSPORIN** (increased risk of toxicity)
- Colchicine: grapefruit juice possibly increases risk of ● **COLCHICINE** toxicity
- Corticosteroids: grapefruit juice increases plasma concentration of **oral** ● **BUDESONIDE**—avoid concurrent use or separate administration by as much as possible and consider reducing **oral** budesonide dose
- Cytotoxics: grapefruit juice possibly increases plasma concentration of **AXITINIB**, **CABOZANTINIB** and **PONATINIB**; grapefruit juice possibly increases the plasma concentration of ● **BOSUTINIB**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib; grapefruit juice possibly increases plasma concentration of ● **CRIZOTINIB** and **VINFLUNINE**—manufacturer of crizotinib and vinflunine advises avoid concomitant use; avoidance of grapefruit juice advised by manufacturer of **DASATINIB** (plasma concentration of dasatinib possibly increased); avoidance of grapefruit juice advised by manufacturer of **EVEROLIMUS**, **IBRUTINIB**, ● **LAPATINIB**, ● **NILOTINIB** and ● **PAZOPANIB**
- ▶ Ivabradine: grapefruit juice increases plasma concentration of **IVABRADINE**
- ▶ Ivacaftor: grapefruit juice possibly increases plasma concentration of **IVACAFTOR**—manufacturer of ivacaftor advises avoid concomitant use
- Lipid-regulating Drugs: grapefruit juice possibly increases plasma concentration of **ATORVASTATIN**; grapefruit juice increases plasma concentration of ● **SIMVASTATIN**—avoid concomitant use; avoidance of grapefruit juice advised by manufacturer of **LOMITAPIDE**
- ▶ Pirofenidone: avoidance of grapefruit juice advised by manufacturer of **PIRFENIDONE**

**Grapefruit Juice** (continued)

- Ranolazine: grapefruit juice possibly increases plasma concentration of ● **RANOLAZINE**—manufacturer of ranolazine advises avoid concomitant use
- Sildenafil: grapefruit juice possibly increases plasma concentration of **SILDENAFIL**
- Sirolimus: grapefruit juice increases plasma concentration of ● **SIROLIMUS**—avoid concomitant use
- Tacrolimus: grapefruit juice increases plasma concentration of ● **TACROLIMUS**
- Tadalafil: grapefruit juice possibly increases plasma concentration of **TADALAFIL**
- Tolvaptan: grapefruit juice increases plasma concentration of ● **TOLVAPTAN**—avoid concomitant use
- Ulipristal: avoidance of grapefruit juice advised by manufacturer of *low-dose* **ULIPRISTAL**
- Vardenafil: grapefruit juice possibly increases plasma concentration of ● **VARDEFENAFIL**—avoid concomitant use

**Griseofulvin**

- Alcohol: griseofulvin possibly enhances effects of **ALCOHOL**
- Anticoagulants: griseofulvin reduces anticoagulant effect of ● **COUMARINS**
- Antiepileptics: absorption of griseofulvin reduced by **PHENOBARBITAL** and **PRIMIDONE** (reduced effect)
- Ciclosporin: griseofulvin possibly reduces plasma concentration of **CICLOSPORIN**
- Oestrogens: anecdotal reports of contraceptive failure and menstrual irregularities when griseofulvin given with **OESTROGENS**
- Progestogens: anecdotal reports of contraceptive failure and menstrual irregularities when griseofulvin given with **PROGESTOGENS**

**Guanethidine** see Adrenergic Neurone Blockers

**Haemophilus Vaccinae** see Vaccines

**Haloperidol** see Antipsychotics

**Heparin** see Heparins

**Heparins**

- ACE Inhibitors: increased risk of hyperkalaemia when heparins given with **ACE INHIBITORS**
- Aliskiren: increased risk of hyperkalaemia when heparins given with **ALISKIREN**
- Analgesics: possible increased risk of bleeding when heparins given with **NSAIDS**; increased risk of haemorrhage when anticoagulants given with *intravenous* ● **DICLOFENAC** (avoid concomitant use, including low-dose heparins); increased risk of haemorrhage when anticoagulants given with ● **KETOROLAC** (avoid concomitant use, including low-dose heparins); anticoagulant effect of heparins enhanced by ● **ASPIRIN**
- Angiotensin-II Receptor Antagonists: increased risk of hyperkalaemia when heparins given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- Anticoagulants: increased risk of haemorrhage when other anticoagulants given with ● **APIXABAN**, ● **DABIGATRAN** and ● **RIVAROXABAN** (avoid concomitant use except when switching with other anticoagulants or using heparin to maintain catheter patency)
- Clopidogrel: increased risk of bleeding when heparins given with **CLOPIDOGREL**
- Dipyridamole: anticoagulant effect of heparins enhanced by **DIPYRIDAMOLE**
- Iloprost: anticoagulant effect of heparins possibly enhanced by **ILOPROST**
- Nitrates: anticoagulant effect of heparins reduced by *infusion* of ● **GLYCERYL TRINITRATE**

**Hepatitis Vaccines** see Vaccines

**Histamine**

- Antidepressants: manufacturer of histamine advises avoid concomitant use with **MAOIs**; effects of histamine theoretically antagonised by **TRICYCLICS**—manufacturer of histamine advises avoid concomitant use
- Antihistamines: effects of histamine theoretically antagonised by **ANTIHISTAMINES**—manufacturer of histamine advises avoid concomitant use

**Histamine** (continued)

- Antimalarials: manufacturer of histamine advises avoid concomitant use with **ANTIMALARIALS**
- Antipsychotics: effects of histamine theoretically antagonised by **ANTIPSYCHOTICS**—manufacturer of histamine advises avoid concomitant use
- Atovaquone: manufacturer of histamine advises avoid concomitant use with **ATOVAQUONE**
- Clonidine: manufacturer of histamine advises avoid concomitant use with **CLONIDINE**
- Corticosteroids: manufacturer of histamine advises avoid concomitant use with **CORTICOSTEROIDS**
- Ulcer-healing Drugs: effects of histamine theoretically antagonised by **HISTAMINE H<sub>2</sub>-ANTAGONISTS**—manufacturer of histamine advises avoid concomitant use

**Histamine H<sub>2</sub>-antagonists**

- Alpha-blockers: cimetidine and ranitidine antagonise effects of ● **TOLAZOLINE**
- Aminophylline: cimetidine inhibits metabolism of ● **AMINOPHYLLINE** (increased plasma concentration)
- Analgesics: cimetidine inhibits metabolism of **OPIOID ANALGESICS** (increased plasma concentration)
- Anthelmintics: cimetidine possibly enhances effects of **ALBENDAZOLE**; cimetidine possibly inhibits metabolism of **MEBENDAZOLE** (increased plasma concentration); cimetidine increases plasma concentration of **PRAZIQUANTEL**
- Anti-arrhythmics: cimetidine increases plasma concentration of **AMIODARONE** and ● **PROPAFENONE**; cimetidine inhibits metabolism of **FLECAINIDE** (increased plasma concentration); cimetidine increases plasma concentration of ● **LIDOCAINE** (increased risk of toxicity)
- Antibacterials: cimetidine increases plasma concentration of **ERYTHROMYCIN** (increased risk of toxicity, including deafness); cimetidine inhibits metabolism of **METRONIDAZOLE** (increased plasma concentration); metabolism of cimetidine accelerated by **RIFAMPICIN** (reduced plasma concentration)
- Anticoagulants: cimetidine inhibits metabolism of ● **COUMARINS** (enhanced anticoagulant effect)
- Antidepressants: cimetidine increases plasma concentration of **CITALOPRAM**, **ESCITALOPRAM**, **MIRTAZAPINE** and **SERTRALINE**; cimetidine inhibits metabolism of **AMITRIPTYLINE**, **DOXEPIN**, **IMIPRAMINE** and **NORTRIPTYLINE** (increased plasma concentration); cimetidine increases plasma concentration of **MOCLOBEMIDE** (halve dose of moclobemide); cimetidine possibly increases plasma concentration of **TRICYCLICS**
- Antidiabetics: cimetidine reduces excretion of **METFORMIN** (increased plasma concentration); cimetidine enhances hypoglycaemic effect of **SULFONYLUREAS**
- Antiepileptics: cimetidine inhibits metabolism of ● **CARBAMAZEPINE**, ● **FOSPHENYTOIN**, ● **PHENYTOIN**, ● **SODIUM VALPROATE** and ● **VALPROIC ACID** (increased plasma concentration)
- Antifungals: histamine H<sub>2</sub>-antagonists reduce absorption of **ITRACONAZOLE** and **KETOCONAZOLE**; cimetidine reduces plasma concentration of ● **POSACONAZOLE**—manufacturer of posaconazole *suspension* advises avoid concomitant use; famotidine, nizatidine and ranitidine possibly reduce plasma concentration of ● **POSACONAZOLE**—manufacturer of posaconazole *suspension* advises avoid concomitant use; cimetidine increases plasma concentration of **TERBINAFINE**
- Antihistamines: manufacturer of loratadine advises cimetidine possibly increases plasma concentration of **LORATADINE**; cimetidine increases plasma concentration of **HYDROXYZINE**
- Antimalarials: avoidance of cimetidine advised by manufacturer of ● **ARTEMETHER WITH LUMEFANTRINE**; cimetidine inhibits metabolism of **CHLOROQUINE**, **HYDROXYCHLOROQUINE** and **QUININE** (increased plasma concentration)
- Antipsychotics: cimetidine possibly enhances effects of **ANTIPSYCHOTICS**, **CHLORPROMAZINE** and **CLOZAPINE**
- Antivirals: manufacturer of atazanavir advises adjust doses of both drugs when cimetidine and nizatidine given with **ATAZANAVIR**—consult atazanavir product literature; famotidine and ranitidine reduce the plasma concentration of ● **ATAZANAVIR** (adjust doses of both drugs—consult atazanavir product literature); famotidine increases plasma

**Histamine H<sub>2</sub>-antagonists**

- Antivirals (continued)
  - concentration of **RALTEGRAVIR**; avoidance of histamine H<sub>2</sub>-antagonists for 12 hours before or 4 hours after **RILPIVIRINE** advised by manufacturer of rilpivirine—consult product literature; cimetidine possibly increases plasma concentration of **SAQUINAVER**
  - ▶ Anxiolytics and Hypnotics: cimetidine inhibits metabolism of **BENZODIAZEPINES**, **CLOMETHIAZOLE** and **LEZALEPON** (increased plasma concentration); cimetidine increases plasma concentration of **MELATONIN**
  - ▶ Beta-blockers: cimetidine increases plasma concentration of **LABETALOL**, **METOPROLOL** and **PROPRANOLOL**; cimetidine possibly increases plasma concentration of **oral TIMOLOL**
  - ▶ Caffeine citrate: cimetidine increases plasma concentration of **CAFFEINE CITRATE**
  - ▶ Calcium-channel Blockers: cimetidine possibly inhibits metabolism of **CALCIUM-CHANNEL BLOCKERS** (increased plasma concentration); cimetidine increases plasma concentration of **ISRADIPINE** (halve dose of isradipine)
  - Ciclosporin: cimetidine possibly increases plasma concentration of • **CICLOSPORIN**
  - Clopidogrel: cimetidine possibly reduces antiplatelet effect of • **CLOPIDOGREL**
  - Cytotoxics: cimetidine possibly enhances myelosuppressive effects of **CARMUSTINE** and **LOMUSTINE**; cimetidine reduces plasma concentration of **DOXORUBICIN**; cimetidine increases plasma concentration of • **EPIDRUBICIN**; cimetidine inhibits metabolism of **CAPECITABINE**, **FLUOROURACIL** and **TEGAFUR** (increased plasma concentration); famotidine possibly reduces plasma concentration of **DASATINIB**; avoidance of cimetidine, famotidine and nizatidine advised by manufacturer of • **ERLOTINIB**; ranitidine reduces plasma concentration of • **ERLOTINIB**—manufacturer of erlotinib advises give at least 2 hours before or 10 hours after ranitidine; ranitidine reduces plasma concentration of • **GEFITINIB**; histamine H<sub>2</sub>-antagonists possibly reduce absorption of **LAPATINIB**; histamine H<sub>2</sub>-antagonists possibly reduce absorption of **PAZOPANIB**—manufacturer of pazopanib advises give at least 2 hours before or 10 hours after histamine H<sub>2</sub>-antagonists
  - ▶ Dopaminergics: cimetidine reduces excretion of **PRAMIPEXOLE** (increased plasma concentration)
  - Ergot Alkaloids: increased risk of ergotism when cimetidine given with • **ERGOTAMINE**—avoid concomitant use
  - Fampridine: avoidance of cimetidine advised by manufacturer of • **FAMPRIDINE**
  - ▶ Histamine: histamine H<sub>2</sub>-antagonists theoretically antagonise effects of **HISTAMINE**—manufacturer of histamine advises avoid concomitant use
  - ▶ Hormone Antagonists: absorption of cimetidine possibly delayed by **OCTREOTIDE**
  - ▶ 5HT<sub>2</sub>-receptor Agonists: cimetidine inhibits metabolism of **ZOLMITRIPTAN** (reduce dose of zolmitriptan)
  - ▶ Lipid-regulating Drugs: separating administration from cimetidine and ranitidine by 12 hours advised by manufacturer of **LOMITAPIDE**
  - ▶ Roflumilast: cimetidine inhibits the metabolism of **ROFLUMILAST**
  - ▶ Sildenafil: cimetidine increases plasma concentration of **SILDENAFIL**—consider reducing dose of sildenafil for erectile dysfunction
  - ▶ Sympathomimetics: cimetidine possibly inhibits metabolism of **DOBUTAMINE**
  - Theophylline: cimetidine inhibits metabolism of • **THEOPHYLLINE** (increased plasma concentration)
  - ▶ Thyroid Hormones: cimetidine reduces absorption of **LEVOTHYROXINE**

**Homatropine** see Antimuscarinics

**Hormone Antagonists** see Abiraterone, Bicalutamide, Danazol, Dutasteride, Enzalutamide, Exemestane, Flutamide, Lanreotide, Octreotide, Pasireotide, Tamoxifen, and Toremifene

**5HT<sub>2</sub>-receptor Agonists**

- Antibacterials: plasma concentration of eletriptan increased by • **CLARITHROMYCIN** and • **ERYTHROMYCIN** (risk of toxicity)—

**5HT<sub>2</sub>-receptor Agonists**

- Antibacterials (continued)
  - avoid concomitant use; metabolism of zolmitriptan possibly inhibited by **QUINOLONES** (reduce dose of zolmitriptan)
- Antidepressants: increased risk of CNS toxicity when 5HT<sub>1</sub> agonists given with • **CITALOPRAM** (manufacturer of citalopram advises avoid concomitant use); increased risk of CNS toxicity when sumatriptan given with • **CITALOPRAM**, • **ESCITALOPRAM**, • **FLUOXETINE**, • **FLUVOXAMINE** or • **PAROXETINE**; metabolism of frovatriptan inhibited by **FLUVOXAMINE**; metabolism of zolmitriptan possibly inhibited by **FLUVOXAMINE** (reduce dose of zolmitriptan); CNS toxicity reported when sumatriptan given with **SERTRALINE**; possible increased serotonergic effects when 5HT<sub>1</sub> agonists given with **DULOXETINE** or **VENLAFAXINE**; risk of CNS toxicity when rizatriptan or sumatriptan given with • **MAOIS** (avoid rizatriptan or sumatriptan for 2 weeks after MAOIs); risk of CNS toxicity when zolmitriptan given with • **MAOIS** or • **MOCLOBEMIDE** (reduce dose of zolmitriptan); risk of CNS toxicity when rizatriptan or sumatriptan given with • **MOCLOBEMIDE** (avoid rizatriptan or sumatriptan for 2 weeks after moclobemide); possible increased serotonergic effects when naratriptan given with **SSRIs**; increased serotonergic effects when 5HT<sub>1</sub> agonists given with • **ST JOHN'S WORT**—avoid concomitant use
- Antifungals: plasma concentration of eletriptan increased by • **ITRACONAZOLE** and • **KETOCONAZOLE** (risk of toxicity)—avoid concomitant use; plasma concentration of almotriptan increased by **KETOCONAZOLE** (increased risk of toxicity)
- Antivirals: plasma concentration of eletriptan increased by • **INDINAVIR** and • **RITONAVIR** (risk of toxicity)—avoid concomitant use
- ▶ Beta-blockers: plasma concentration of rizatriptan increased by **PROPRANOLOL** (manufacturer of rizatriptan advises halve dose and avoid within 2 hours of propranolol)
- Dopoxetine: possible increased risk of serotonergic effects when 5HT<sub>1</sub> agonists given with • **DAPOXETINE** (manufacturer of dapoxetine advises 5HT<sub>1</sub> agonists should not be started until 1 week after stopping dapoxetine, avoid dapoxetine for 2 weeks after stopping 5HT<sub>1</sub> agonists)
- ▶ Dopaminergics: avoidance of 5HT<sub>1</sub> agonists advised by manufacturer of **SELEGILINE**
- Ergot Alkaloids: increased risk of vasospasm when eletriptan, frovatriptan or naratriptan given with • **ERGOTAMINE** (avoid ergotamine for 24 hours after eletriptan, frovatriptan or naratriptan, avoid eletriptan, frovatriptan or naratriptan for 24 hours after ergotamine); increased risk of vasospasm when almotriptan, rizatriptan, sumatriptan or zolmitriptan given with • **ERGOTAMINE** (avoid ergotamine for 6 hours after almotriptan, rizatriptan, sumatriptan or zolmitriptan, avoid almotriptan, rizatriptan, sumatriptan or zolmitriptan for 24 hours after ergotamine)
- ▶ Lithium: possible risk of toxicity when sumatriptan given with **LITHIUM**
- ▶ Ulcer-healing Drugs: metabolism of zolmitriptan inhibited by **CIMETIDINE** (reduce dose of zolmitriptan)

**5HT<sub>2</sub>-receptor Antagonists**

- ▶ Analgesics: ondansetron possibly antagonises effects of **TRAMADOL**
- ▶ Antibacterials: metabolism of ondansetron accelerated by **RIFAMPICIN** (reduced effect)
- ▶ Antidepressants: possible increased serotonergic effects when 5HT<sub>2</sub> antagonists given with **SSRI-RELATED ANTIDEPRESSANTS** or **SSRIs**
- ▶ Antiepileptics: metabolism of ondansetron accelerated by **CARBAMAZEPINE**, **FOSPHENYTOIN** and **PHENYTOIN** (reduced effect)
- Cytotoxics: increased risk of ventricular arrhythmias when ondansetron given with • **VANDETANIB**—avoid concomitant use
- Dopaminergics: possible increased hypotensive effect when ondansetron given with • **APOMORPHINE**—avoid concomitant use

**Human papillomavirus Vaccine** see Vaccines

**Hydralazine** see Vasodilator Antihypertensives



**Hydrochlorothiazide** *see* Diuretics

**Hydrocortisone** *see* Corticosteroids

**Hydroflumethiazide** *see* Diuretics

**Hydromorphone** *see* Opioid Analgesics

**Hydrotalcite** *see* Antacids

**Hydroxocobalamin**

Antibacterials: response to hydroxocobalamin reduced by

**CHLORAMPHENICOL**

**Hydroxycarbamide**

Antipsychotics: avoid concomitant use of cytotoxics with

● **CLOZAPINE** (increased risk of agranulocytosis)

Antivirals: increased risk of toxicity when hydroxycarbamide given with ● **DIDANOSINE** and ● **STAVUDINE**—avoid concomitant use

**Hydroxychloroquine**

Adsorbents: absorption of hydroxychloroquine reduced by **KAOLIN**

Agalsidase Alfa and Beta: hydroxychloroquine possibly inhibits effects of **AGALSIDASE ALFA** AND **BETA** (manufacturers of agalsidase alfa and beta advise avoid concomitant use)

Antacids: absorption of hydroxychloroquine reduced by **ANTACIDS**

Anti-arrhythmics: increased risk of ventricular arrhythmias when hydroxychloroquine given with ● **AMIODARONE**—avoid concomitant use

Antibacterials: increased risk of ventricular arrhythmias when hydroxychloroquine given with ● **MOXIFLOXACIN**—avoid concomitant use

Antimalarials: avoidance of antimalarials advised by manufacturer of ● **ARTEMETHER WITH LUMEFANTRINE**; increased risk of convulsions when hydroxychloroquine given with

● **MEFLOQUINE**

Antipsychotics: increased risk of ventricular arrhythmias when hydroxychloroquine given with ● **DROPERIDOL**—avoid concomitant use

Cardiac Glycosides: hydroxychloroquine possibly increases plasma concentration of ● **DIGOXIN**

Ciclosporin: hydroxychloroquine increases plasma concentration of ● **CICLOSPORIN** (increased risk of toxicity)

Cytotoxics: possible increased risk of ventricular arrhythmias when hydroxychloroquine given with ● **BOSUTINIB**

Histamine: avoidance of antimalarials advised by manufacturer of **HISTAMINE**

Lanthanum: absorption of hydroxychloroquine possibly reduced by **LANTHANUM** (give at least 2 hours apart)

Laronidase: hydroxychloroquine possibly inhibits effects of **LARONIDASE** (manufacturer of laronidase advises avoid concomitant use)

Parasympathomimetics: hydroxychloroquine has potential to increase symptoms of myasthenia gravis and thus diminish effect of **NEOSTIGMINE** and **PYRIDOSTIGMINE**

Ulcer-healing Drugs: metabolism of hydroxychloroquine inhibited by **CIMETIDINE** (increased plasma concentration)

Vaccines: antimalarials inactivate **ORAL TYPHOID VACCINE**—*see* under Typhoid Vaccine in BNF

**Hydroxyzine** *see* Antihistamines

**Hyoscine** *see* Antimuscarinics

**Ibandronic Acid** *see* Bisphosphonates

**Ibrutinib**

Anti-arrhythmics: plasma concentration of ibrutinib possibly increased by ● **AMIODARONE** and ● **DRONEDARONE**—reduce dose of ibrutinib (*see* under Ibrutinib, p. 809)

Antibacterials: plasma concentration of ibrutinib possibly increased by ● **CIPROFLOXACIN**, ● **CLARITHROMYCIN**, ● **ERYTHROMYCIN** and ● **TELITHROMYCIN**—reduce dose of ibrutinib (*see* under Ibrutinib, p. 809); plasma concentration of ibrutinib reduced by ● **RIFAMPICIN**—avoid concomitant use

Anticoagulants: manufacturer of ibrutinib advises avoid concomitant use with **COUMARINS** and **PHENINDIONE**

Antidepressants: plasma concentration of ibrutinib possibly reduced by ● **ST JOHN'S WORT**—manufacturer of ibrutinib advises avoid concomitant use

Antiepileptics: plasma concentration of ibrutinib possibly reduced by ● **CARBAMAZEPINE**, ● **FOSPHENYTOIN** and

**Ibrutinib**

Antiepileptics (continued)

● **PHENYTOIN**—manufacturer of ibrutinib advises avoid concomitant use

Antifungals: plasma concentration of ibrutinib increased by ● **KETOCONAZOLE**—reduce dose of ibrutinib (*see* under Ibrutinib, p. 809); plasma concentration of ibrutinib possibly increased by ● **FLUCONAZOLE**, ● **ITRACONAZOLE** and ● **VORICONAZOLE**—reduce dose of ibrutinib (*see* under Ibrutinib, p. 809)

Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)

Antivirals: plasma concentration of ibrutinib possibly increased by ● **ATAZANAVIR**, ● **DARUNAVIR**, ● **FOSAMPRENAVIR**, ● **INDINAVIR**, ● **RONAVIR** and ● **SAQUINAVIR**—reduce dose of ibrutinib (*see* under Ibrutinib, p. 809)

Aprepitant: plasma concentration of ibrutinib possibly increased by ● **APREPITANT**—reduce dose of ibrutinib (*see* under Ibrutinib, p. 809)

Calcium-channel Blockers: plasma concentration of ibrutinib possibly increased by ● **DILTIAZEM** and ● **VERAPAMIL**—reduce dose of ibrutinib (*see* under Ibrutinib, p. 809)

Cardiac Glycosides: manufacturer of ibrutinib advises give **DIGOXIN** at least 6 hours before or after ibrutinib

Cobicistat: plasma concentration of ibrutinib possibly increased by ● **COBICISTAT**—reduce dose of ibrutinib (*see* under Ibrutinib, p. 809)

Cytotoxics: plasma concentration of ibrutinib possibly increased by ● **CRIZOTINIB** and ● **IMATINIB**—reduce dose of ibrutinib (*see* under Ibrutinib, p. 809)

Fosaprepitant: plasma concentration of ibrutinib possibly increased by **FOSAPREPITANT**

Grapefruit Juice: manufacturer of ibrutinib advises avoid concomitant use with **GRAPEFRUIT JUICE**

Vitamins: manufacturer of ibrutinib advises avoid concomitant use with **VITAMIN E**

**Ibuprofen** *see* NSAIDs

**Idarubicin**

Antipsychotics: avoid concomitant use of cytotoxics with

● **CLOZAPINE** (increased risk of agranulocytosis)

Ciclosporin: plasma concentration of idarubicin increased by ● **CICLOSPORIN**

**Idelalisib**

Alpha-blockers: manufacturer of idelalisib advises avoid concomitant use with **ALFUZOSIN**

Anti-arrhythmics: manufacturer of idelalisib advises avoid concomitant use with **AMIODARONE**

Antibacterials: plasma concentration of idelalisib reduced by ● **RIFAMPICIN**—avoid concomitant use

Antidepressants: plasma concentration of idelalisib possibly reduced by ● **ST JOHN'S WORT**—manufacturer of idelalisib advises avoid concomitant use

Antiepileptics: plasma concentration of idelalisib possibly reduced by ● **CARBAMAZEPINE**, ● **FOSPHENYTOIN** and ● **PHENYTOIN**—manufacturer of idelalisib advises avoid concomitant use

Antifungals: plasma concentration of idelalisib increased by **KETOCONAZOLE**

Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis); manufacturer of idelalisib advises avoid concomitant use with **PIMOZIDE** and **QUETIAPINE**

Anxiolytics and Hypnotics: manufacturer of idelalisib advises avoid concomitant use of **oral MIDAZOLAM**

Ergot Alkaloids: manufacturer of idelalisib advises avoid concomitant use with **ERGOTAMINE**

Lipid-regulating Drugs: manufacturer of idelalisib advises avoid concomitant use with **SIMVASTATIN**

Sildenafil: manufacturer of idelalisib advises avoid concomitant use of **SILDENAFIL** for pulmonary arterial hypertension

Sympathomimetics, Beta<sub>2</sub>: manufacturer of idelalisib advises avoid concomitant use with **SALMETEROL**

**Ifosfamide**

Anticoagulants: ifosfamide possibly enhances anticoagulant effect of ● **COUMARINS**

**Ifosfamide** (continued)

- ▶ Antifungals: metabolism of ifosfamide inhibited by **KETOCONAZOLE**
- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)
- ▶ Cytotoxics: increased risk of ototoxicity when ifosfamide given with **CISPLATIN**

**Iloprost**

- ▶ Analgesics: increased risk of bleeding when iloprost given with **NSAIDs** or **ASPIRIN**
- ▶ Anticoagulants: iloprost possibly enhances anticoagulant effect of **COUMARINS** and **HEPARINS**; increased risk of bleeding when iloprost given with **PHENINDIONE**
- ▶ Clopidogrel: increased risk of bleeding when iloprost given with **CLOPIDOGREL**
- ▶ Eptifibatide: increased risk of bleeding when iloprost given with **EPTIFIBATIDE**
- ▶ Tirofiban: increased risk of bleeding when iloprost given with **TIROFIBAN**

**Imatinib**

- ▶ Analgesics: manufacturer of imatinib advises caution with **PARACETAMOL**
- Antibacterials: plasma concentration of imatinib reduced by
  - **RIFAMPICIN**—avoid concomitant use
- ▶ Anticoagulants: manufacturer of imatinib advises replacement of **WARFARIN** with a heparin (possibility of enhanced warfarin effect)
- Antidepressants: plasma concentration of imatinib reduced by
  - **ST JOHN'S WORT**—avoid concomitant use
- Antiepileptics: plasma concentration of imatinib reduced by
  - **CARBAMAZEPINE**, ● **FOSPHENYTOIN**, ● **OXCARBAZEPINE** and ● **PHENYTOIN**—avoid concomitant use
- ▶ Antifungals: plasma concentration of imatinib increased by **KETOCONAZOLE**
- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)
- Antivirals: avoidance of imatinib advised by manufacturer of
  - **BOCEPREVIR**
- ▶ Ciclosporin: imatinib possibly increases plasma concentration of **CICLOSPORIN**
- Cytotoxics: imatinib possibly increases the plasma concentration of ● **BOSUTINIB**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib; imatinib increases plasma concentration of ● **EVEROLIMUS** (consider reducing the dose of everolimus—consult everolimus product literature); imatinib possibly increases the plasma concentration of ● **IBRUTINIB**—reduce dose of ibrutinib (see under Ibrutinib, p. 809)
- ▶ Lipid-regulating Drugs: imatinib increases plasma concentration of **SIMVASTATIN**
- ▶ Tacrolimus: imatinib increases plasma concentration of **TACROLIMUS**
- ▶ Thyroid Hormones: imatinib possibly reduces plasma concentration of **LEVOTHYROXINE**

**Imidapril** see ACE Inhibitors

**Imipenem with Cilastatin**

- Antiepileptics: carbapenems reduce plasma concentration of
  - **SODIUM VALPROATE** and ● **VALPROIC ACID**—avoid concomitant use
- Antivirals: increased risk of convulsions when imipenem with cilastatin given with ● **GANCICLOVIR** or ● **VALGANCICLOVIR**
- ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Imipramine** see Antidepressants, Tricyclic

**Immunoglobulins**

- Vaccines: anti-d immunoglobulins and normal immunoglobulin might impair immune response to ● **BCG VACCINE**—give BCG vaccine at least 3 weeks before or 3 months after anti-d immunoglobulins and normal immunoglobulin; anti-d immunoglobulins and normal immunoglobulin might impair immune response to
  - **MMR VACCINE**—give MMR vaccine at least 3 weeks before or 3 months after anti-d immunoglobulins and normal immunoglobulin; anti-d immunoglobulins and normal immunoglobulin might impair immune response to live

**Immunoglobulins**

## ● Vaccines (continued)

- **INFLUENZA VACCINE**—give live influenza vaccine at least 3 weeks before or 3 months after anti-d immunoglobulins and normal immunoglobulin; anti-d immunoglobulins and normal immunoglobulin might impair immune response to
- **ORAL TYPHOID VACCINE**—give oral typhoid vaccine at least 3 weeks before or 3 months after anti-d immunoglobulins and normal immunoglobulin; anti-d immunoglobulins and normal immunoglobulin might impair immune response to
- **POLIOMYELITIS VACCINE**—give oral poliomyelitis vaccine at least 3 weeks before or 3 months after anti-d immunoglobulins and normal immunoglobulin; anti-d immunoglobulins and normal immunoglobulin might impair immune response to
- **SMALLPOX VACCINE**—give smallpox vaccine at least 3 weeks before or 3 months after anti-d immunoglobulins and normal immunoglobulin; anti-d immunoglobulins and normal immunoglobulin might impair immune response to
- **VARICELLA-ZOSTER VACCINE**—give varicella-zoster vaccine at least 3 weeks before or 3 months after anti-d immunoglobulins and normal immunoglobulin; anti-d immunoglobulins and normal immunoglobulin might impair immune response to
- **YELLOW FEVER VACCINE**—give yellow fever vaccine at least 3 weeks before or 3 months after anti-d immunoglobulins and normal immunoglobulin

**Indacaterol** see Sympathomimetics, Beta<sub>2</sub>

**Indapamide** see Diuretics

**Indinavir**

- ▶ Aldesleukin: plasma concentration of indinavir possibly increased by **ALDESLEUKIN**
- Anti-arrhythmics: indinavir possibly increases plasma concentration of ● **AMIODARONE**—avoid concomitant use; indinavir possibly increases plasma concentration of
  - **FLECAINIDE** (increased risk of ventricular arrhythmias—avoid concomitant use)
- Antibacterials: indinavir increases plasma concentration of
  - **RIFABUTIN**, also plasma concentration of indinavir decreased (reduce dose of rifabutin and increase dose of indinavir); metabolism of indinavir accelerated by ● **RIFAMPICIN** (reduced plasma concentration—avoid concomitant use); avoidance of concomitant indinavir in severe renal and hepatic impairment advised by manufacturer of ● **TELITHROMYCIN**
- ▶ Anticoagulants: avoidance of indinavir advised by manufacturer of **APIXABAN** and **RIVAROXABAN**
- Antidepressants: plasma concentration of indinavir reduced by
  - **ST JOHN'S WORT**—avoid concomitant use
- Antiepileptics: plasma concentration of indinavir possibly reduced by ● **CARBAMAZEPINE**, ● **FOSPHENYTOIN** and ● **PHENYTOIN**, also plasma concentration of carbamazepine, fosphenytoin and phenytoin possibly increased; plasma concentration of indinavir possibly reduced by
  - **PHENOBARBITAL** and ● **PRIMIDONE**
- Antifungals: plasma concentration of indinavir increased by
  - **ITRACONAZOLE** and ● **KETOCONAZOLE** (consider reducing dose of indinavir)
- Antimalarials: caution with indinavir advised by manufacturer of **ARTEMETHER WITH LUMEFANTRINE**; indinavir possibly increases plasma concentration of ● **QUININE** (increased risk of toxicity)
- ▶ Antimuscarinics: avoidance of indinavir advised by manufacturer of **DARIFENACIN** and **TOLTERODINE**; manufacturer of fesoterodine advises dose reduction when indinavir given with **FESOTERODINE**—consult fesoterodine product literature
- Antipsychotics: indinavir possibly increases plasma concentration of ● **ARIPRAZOLE** (reduce dose of aripiprazole—consult aripiprazole product literature); indinavir possibly increases plasma concentration of
  - **LURASIDONE**—avoid concomitant use; indinavir possibly increases plasma concentration of ● **PIMOZIDE** (increased risk of ventricular arrhythmias—avoid concomitant use); indinavir possibly increases plasma concentration of

**Indinavir**

- Antipsychotics (continued)
  - **QUETIAPINE**—manufacturer of quetiapine advises avoid concomitant use
- Antivirals: avoid concomitant use of indinavir with
  - **ATAZANAVIR**; plasma concentration of both drugs increased when indinavir given with **DARUNAVIR**; absorption of indinavir reduced by **DIDANOSINE tablets** (give at least 1 hour apart); plasma concentration of indinavir reduced by **EFAVIRENZ** and **NEVIRAPINE**; plasma concentration of indinavir possibly reduced by • **ETRAVIRINE**—avoid concomitant use; indinavir increases plasma concentration of • **MARAVIROC** (consider reducing dose of maraviroc); plasma concentration of indinavir increased by **RITONAVIR**; indinavir increases plasma concentration of **SAQUINAVIR**
- Anxiolytics and Hypnotics: increased risk of prolonged sedation when indinavir given with • **ALPRAZOLAM**—avoid concomitant use; indinavir possibly increases plasma concentration of • **MIDAZOLAM** (risk of prolonged sedation—avoid concomitant use of *oral* midazolam)
- Atovaquone: plasma concentration of indinavir possibly reduced by **ATOVAQUONE**
- Avanafil: indinavir possibly increases plasma concentration of • **AVANAFIL**—manufacturer of avanafil advises avoid concomitant use
- Bosentan: plasma concentration of indinavir possibly reduced by **BOSENTAN**
- Ciclosporin: indinavir increases plasma concentration of • **CYCLOSPORIN**
- Colchicine: indinavir possibly increases risk of • **COLCHICINE** toxicity—suspend or reduce dose of colchicine (avoid concomitant use in hepatic or renal impairment)
- Corticosteroids: plasma concentration of indinavir possibly reduced by **DEXAMETHASONE**
- Cytotoxics: indinavir possibly increases plasma concentration of **AXITINIB** (reduce dose of axitinib—consult axitinib product literature); indinavir possibly increases the plasma concentration of • **BOSUTINIB** and • **CABAZITAXEL**—manufacturer of bosutinib and cabazitaxel advises avoid or consider reducing dose of bosutinib and cabazitaxel; indinavir possibly increases plasma concentration of • **CRIZOTINIB** and • **EVEROLIMUS**—manufacturer of crizotinib and everolimus advises avoid concomitant use; indinavir possibly increases the plasma concentration of • **IBRUTINIB**—reduce dose of ibrutinib (see under Ibrutinib, p. 809); indinavir possibly increases plasma concentration of • **PAZOPANIB** (reduce dose of pazopanib); indinavir possibly increases plasma concentration of **PONATINIB**—consider reducing initial dose of ponatinib (see under Ponatinib, p. 814); manufacturer of ruxolitinib advises dose reduction when indinavir given with • **RUXOLITINIB**—consult ruxolitinib product literature; indinavir possibly increases plasma concentration of • **DOCETAXEL**—manufacturer of docetaxel advises avoid concomitant use or consider reducing docetaxel dose
- Ergot Alkaloids: increased risk of ergotism when indinavir given with • **ERGOMETRINE** or • **ERGOTAMINE**—avoid concomitant use
- 5HT<sub>1</sub>-receptor Agonists: indinavir increases plasma concentration of • **ELETRIPTAN** (risk of toxicity)—avoid concomitant use
- Lipid-regulating Drugs: possible increased risk of myopathy when indinavir given with **ATORVASTATIN**; possible increased risk of myopathy when indinavir given with • **ROSUVASTATIN**—manufacturer of rosuvastatin advises avoid concomitant use; increased risk of myopathy when indinavir given with • **SIMVASTATIN** (avoid concomitant use); avoidance of indinavir advised by manufacturer of • **LOMITAPIDE** (plasma concentration of lomitapide possibly increased)
- Orlistat: absorption of indinavir possibly reduced by • **ORLISTAT**
- Ranolazine: indinavir possibly increases plasma concentration of • **RANOLAZINE**—manufacturer of ranolazine advises avoid concomitant use
- Sildenafil: indinavir increases plasma concentration of • **SILDENAFIL**—reduce initial dose of sildenafil

**Indinavir (continued)**

- Tadalafil: indinavir possibly increases plasma concentration of **TADALAFIL**
  - Vardenafil: indinavir increases plasma concentration of • **VARDENAFIL**—avoid concomitant use
- Indometacin** see NSAIDs
- Indoramin** see Alpha-blockers
- Infliximab**
- Abatacept: avoid concomitant use of infliximab with • **ABATACEPT**
  - Anakinra: avoid concomitant use of infliximab with • **ANAKINRA**
  - Antipsychotics: avoid concomitant use of cytotoxics with • **CLOZAPINE** (increased risk of agranulocytosis)
  - Vaccines: risk of generalised infections when monoclonal antibodies given with live • **VACCINES**—avoid concomitant use
- Influenza Vaccine** see Vaccines
- Insulin** see Antidiabetics
- Interferon Alfa** see Interferons
- Interferon Gamma** see Interferons
- Interferons**
- Aminophylline: interferon alfa and peginterferon alfa inhibit metabolism of • **AMINOPHYLLINE** (consider reducing dose of aminophylline)
  - Antivirals: caution with peginterferon alfa advised by manufacturer of **ADEFOVIR**; increased risk of peripheral neuropathy when interferon alfa and peginterferon alfa given with • **TELBIVUDINE**
  - Theophylline: interferon alfa and peginterferon alfa inhibit metabolism of • **THEOPHYLLINE** (consider reducing dose of theophylline)
  - Vaccines: manufacturer of interferon gamma advises avoid concomitant use with **VACCINES**
- Ipilimumab**
- Antipsychotics: avoid concomitant use of cytotoxics with • **CLOZAPINE** (increased risk of agranulocytosis)
  - Cytotoxics: manufacturer of ipilimumab advises avoid concomitant use with **VEMURAFENIB**
  - Vaccines: risk of generalised infections when monoclonal antibodies given with live • **VACCINES**—avoid concomitant use
- Ipratropium** see Antimuscarinics
- Irbesartan** see Angiotensin-II Receptor Antagonists
- Irinotecan**
- Antidepressants: metabolism of irinotecan accelerated by • **ST JOHN'S WORT** (reduced plasma concentration—avoid concomitant use)
  - Antiepileptics: plasma concentration of irinotecan and its active metabolite reduced by **CARBAMAZEPINE**, **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**
  - Antifungals: plasma concentration of irinotecan reduced by • **KETOCONAZOLE** (but concentration of active metabolite of irinotecan increased)—avoid concomitant use; increased risk of toxicity when irinotecan given with • **ITRACONAZOLE**—avoid concomitant use
  - Antipsychotics: avoid concomitant use of cytotoxics with • **CLOZAPINE** (increased risk of agranulocytosis)
  - Antivirals: metabolism of irinotecan possibly inhibited by • **ATAZANAVIR** (increased risk of toxicity)
  - Cytotoxics: plasma concentration of active metabolite of irinotecan increased by • **LAPATINIB**—consider reducing dose of irinotecan; plasma concentration of irinotecan increased by **REGORAFENIB**; plasma concentration of irinotecan possibly increased by **SORAFENIB**
- Iron Salts**
- Antacids: absorption of *oral* iron salts reduced by **ORAL MAGNESIUM SALTS** (as magnesium trisilicate)
  - Antibacterials: *oral* iron salts reduce absorption of **CIPROFLOXACIN**, **LEVOFLOXACIN**, **MOXIFLOXACIN** and **OFLOXACIN**; *oral* iron salts reduce absorption of **NORFLOXACIN** (give at least 2 hours apart); *oral* iron salts reduce absorption of **TETRACYCLINES**, also absorption of *oral* iron salts reduced by tetracyclines
  - Antivirals: *oral* iron salts reduce absorption of **DOLUTEGRAVIR**—manufacturer of dolutegravir advises give at least 2 hours before or 6 hours after *oral* iron salts

**Iron Salts** (continued)

- ▶ Bisphosphonates: *oral* iron salts reduce absorption of **BISPHOSPHONATES**
- ▶ Calcium Salts: absorption of *oral* iron salts reduced by **CALCIUM SALTS**
- ▶ Dopaminergics: *oral* iron salts possibly reduce absorption of **CO-BENELDOPA**, **CO-CARELDOPA** and **LEVODOPA**; *oral* iron salts reduce absorption of **ENTACAPONE**
- ▶ Eltrombopag: *oral* iron salts possibly reduce absorption of **ELTROMBOPAG** (give at least 4 hours apart)
- ▶ Methyldopa: *oral* iron salts antagonise hypotensive effect of **METHYLDOPA**
- ▶ Mycophenolate: *oral* iron salts reduce absorption of **MYCOPHENOLATE**
- ▶ Penicillamine: *oral* iron salts reduce absorption of **PENICILLAMINE**
- ▶ Thyroid Hormones: *oral* iron salts reduce absorption of **LEVOTHYROXINE** (give at least 2 hours apart)
- ▶ Trientine: absorption of *oral* iron salts reduced by **TRIENTINE**
- ▶ Zinc: *oral* iron salts reduce absorption of **ZINC**, also absorption of *oral* iron salts reduced by zinc

**Iscarboxazid** see MAOIs

**Isoflurane** see Anaesthetics, General

**Ismethoptene** see Sympathomimetics

**Isoniazid**

- ▶ Aminophylline: isoniazid possibly increases plasma concentration of **AMINOPHYLLINE**
- ▶ Anaesthetics, General: increased risk of hepatotoxicity when isoniazid given with **ISOFLURANE**
- ▶ Analgesics: avoidance of isoniazid advised by manufacturer of **PETHIDINE**
- ▶ Antacids: absorption of isoniazid reduced by **ANTACIDS**
- Antibacterials: increased risk of hepatotoxicity when isoniazid given with ● **RIFAMPICIN**; increased risk of CNS toxicity when isoniazid given with **CYCLOSERINE**
- Antiepileptics: isoniazid increases plasma concentration of ● **CARBAMAZEPINE** (also possibly increased isoniazid hepatotoxicity); isoniazid inhibits metabolism of ● **ETHOSUXIMIDE** (increased plasma concentration and risk of toxicity); isoniazid possibly inhibits metabolism of **FOSPHENYTOIN** and **PHENYTOIN** (increased risk of toxicity)
- ▶ Antifungals: isoniazid possibly reduces plasma concentration of **KETOCONAZOLE**
- ▶ Anxiolytics and Hypnotics: isoniazid inhibits the metabolism of **DIAZEPAM**
- ▶ Corticosteroids: plasma concentration of isoniazid possibly reduced by **CORTICOSTEROIDS**
- ▶ Disulfiram: isoniazid possibly increases CNS effects of **DISULFIRAM**
- ▶ Dopaminergics: isoniazid possibly reduces effects of **CO-BENELDOPA**, **CO-CARELDOPA** and **LEVODOPA**
- ▶ Lipid-regulating Drugs: separating administration from isoniazid by 12 hours advised by manufacturer of **LOMITAPIDE**
- ▶ Theophylline: isoniazid possibly increases plasma concentration of **THEOPHYLLINE**
- ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Isosorbide Dinitrate** see Nitrates

**Isosorbide Mononitrate** see Nitrates

**Isotretinoin** see Retinoids

**Isradipine** see Calcium-channel Blockers

**Itraconazole** see Antifungals, Triazole

**Ivabradine**

- Anti-arrhythmics: increased risk of ventricular arrhythmias when ivabradine given with ● **AMIODARONE** or ● **DISOPYRAMIDE**
- Antibacterials: plasma concentration of ivabradine possibly increased by ● **CLARITHROMYCIN** and ● **TELITHROMYCIN**—avoid concomitant use; increased risk of ventricular arrhythmias when ivabradine given with ● **ERYTHROMYCIN**—avoid concomitant use
- ▶ Antidepressants: plasma concentration of ivabradine reduced by **ST JOHN'S WORT**—avoid concomitant use
- Antifungals: plasma concentration of ivabradine increased by ● **KETOCONAZOLE**—avoid concomitant use; plasma concentration of ivabradine increased by **FLUCONAZOLE**—

**Ivabradine**

● **Antifungals** (continued)

- reduces initial dose of ivabradine; plasma concentration of ivabradine possibly increased by ● **ITRACONAZOLE**—avoid concomitant use
- Antimalarials: increased risk of ventricular arrhythmias when ivabradine given with ● **MEFLOQUINE**
- Antipsychotics: increased risk of ventricular arrhythmias when ivabradine given with ● **PIMOZIDE**
- Antivirals: plasma concentration of ivabradine possibly increased by ● **RITONAVIR**—avoid concomitant use
- Beta-blockers: increased risk of ventricular arrhythmias when ivabradine given with ● **SOTALOL**
- Calcium-channel Blockers: plasma concentration of ivabradine increased by ● **DILTIAZEM** and ● **VERAPAMIL**—avoid concomitant use
- ▶ Grapefruit Juice: plasma concentration of ivabradine increased by **GRAPEFRUIT JUICE**
- Pentamidine Isetionate: increased risk of ventricular arrhythmias when ivabradine given with ● **PENTAMIDINE ISETIONATE**

**Ivacaftor**

- Antibacterials: plasma concentration of ivacaftor possibly increased by ● **CLARITHROMYCIN**, ● **ERYTHROMYCIN** and ● **TELITHROMYCIN** (see under Ivacaftor, p. 257); plasma concentration of ivacaftor possibly reduced by ● **RIFABUTIN**—manufacturer of ivacaftor advises avoid concomitant use; plasma concentration of ivacaftor reduced by ● **RIFAMPICIN**—manufacturer of ivacaftor advises avoid concomitant use
- Antidepressants: plasma concentration of ivacaftor possibly reduced by ● **ST JOHN'S WORT**—manufacturer of ivacaftor advises avoid concomitant use
- Antiepileptics: plasma concentration of ivacaftor possibly reduced by ● **CARBAMAZEPINE**, ● **FOSPHENYTOIN**, ● **PHENOBARBITAL**, ● **PHENYTOIN** and ● **PRIMIDONE**—manufacturer of ivacaftor advises avoid concomitant use
- Antifungals: plasma concentration of ivacaftor increased by ● **FLUCONAZOLE** and ● **KETOCONAZOLE** (see under Ivacaftor, p. 257); plasma concentration of ivacaftor possibly increased by ● **ITRACONAZOLE**, ● **POSACONAZOLE** and ● **VORICONAZOLE** (see under Ivacaftor, p. 257)
- ▶ Anxiolytics and Hypnotics: ivacaftor increases plasma concentration of **MIDAZOLAM**
- ▶ Cardiac Glycosides: ivacaftor increases plasma concentration of **DIGOXIN**
- ▶ Grapefruit Juice: plasma concentration of ivacaftor possibly increased by **GRAPEFRUIT JUICE**—manufacturer of ivacaftor advises avoid concomitant use
- ▶ Lipid-regulating Drugs: separating administration from ivacaftor by 12 hours advised by manufacturer of **LOMITAPIDE**

**Ivermectin**

- Anthelmintics: plasma concentration of ivermectin possibly increased by **LEVAMISOLE**
- Anticoagulants: ivermectin possibly enhances anticoagulant effect of **COUMARINS**

**Japanese Encephalitis Vaccine** see Vaccines

**Kaolin**

- ▶ Analgesics: kaolin possibly reduces absorption of **ASPIRIN**
- ▶ Antibacterials: kaolin possibly reduces absorption of **TETRACYCLINES**
- ▶ Antimalarials: kaolin reduces absorption of **CHLOROQUINE** and **HYDROXYCHLOROQUINE**
- ▶ Antipsychotics: kaolin possibly reduces absorption of **PHENOTHIAZINES**

**Ketamine** see Anaesthetics, General

**Ketoconazole** see Antifungals, Imidazole

**Ketoprofen** see NSAIDs

**Ketorolac** see NSAIDs

**Ketotifen** see Antihistamines

**Labetalol** see Beta-blockers

**Lacidipine** see Calcium-channel Blockers

**Lacosamide**

- Antidepressants: anticonvulsant effect of antiepileptics possibly antagonised by **MAOIs** and ● **TRICYCLIC-RELATED ANTIDEPRESSANTS** (convulsive threshold lowered);



**Lacosamide**

- Antidepressants (continued)  
anticonvulsant effect of antiepileptics antagonised by ● **SSRIS** and ● **TRICYCLICS** (convulsive threshold lowered)
- Antimalarials: anticonvulsant effect of antiepileptics antagonised by ● **MEFLOQUINE**
- Antipsychotics: anticonvulsant effect of antiepileptics antagonised by ● **ANTIPSYCHOTICS** (convulsive threshold lowered)
- Orlistat: possible increased risk of convulsions when antiepileptics given with ● **ORLISTAT**

**Lactulose**

- Anticoagulants: lactulose possibly enhances anticoagulant effect of ● **COUMARINS**

**Lamivudine**

- Antibacterials: plasma concentration of lamivudine increased by ● **TRIMETHOPRIM** (as co-trimoxazole)—avoid concomitant use of high-dose co-trimoxazole
- Antivirals: avoidance of lamivudine advised by manufacturer of ● **EMTRICITABINE**
- Cytotoxics: manufacturer of lamivudine advises avoid concomitant use with ● **CLADRIBINE**
- Orlistat: absorption of lamivudine possibly reduced by ● **ORLISTAT**

**Lamotrigine**

- Antibacterials: plasma concentration of lamotrigine reduced by ● **RIFAMPICIN**
- Antidepressants: anticonvulsant effect of antiepileptics possibly antagonised by ● **MAOIS** and ● **TRICYCLIC-RELATED ANTIDEPRESSANTS** (convulsive threshold lowered); anticonvulsant effect of antiepileptics antagonised by ● **SSRIS** and ● **TRICYCLICS** (convulsive threshold lowered)
- Antiepileptics: plasma concentration of lamotrigine often reduced by ● **CARBAMAZEPINE**, also plasma concentration of an active metabolite of carbamazepine sometimes raised (but evidence is conflicting); plasma concentration of lamotrigine reduced by ● **FOSPHENYTOIN**, ● **PHENOBARBITAL**, ● **PHENYTOIN** and ● **PRIMIDONE**; plasma concentration of lamotrigine increased by ● **SODIUM VALPROATE** and ● **VALPROIC ACID** (increased risk of toxicity—reduce lamotrigine dose)
- Antimalarials: anticonvulsant effect of antiepileptics antagonised by ● **MEFLOQUINE**
- Antipsychotics: anticonvulsant effect of antiepileptics antagonised by ● **ANTIPSYCHOTICS** (convulsive threshold lowered)
- Antivirals: plasma concentration of lamotrigine possibly reduced by ● **RITONAVIR**
- Oestrogens: plasma concentration of lamotrigine reduced by ● **OESTROGENS**—consider increasing dose of lamotrigine
- Orlistat: possible increased risk of convulsions when antiepileptics given with ● **ORLISTAT**
- Progestogens: plasma concentration of lamotrigine possibly increased by ● **DESGESTREL**

**Lanreotide**

- Antidiabetics: lanreotide possibly reduces requirements for ● **ANTIDIABETICS**
- Ciclosporin: lanreotide reduces plasma concentration of ● **CICLOSPORIN**

**Lansoprazole** see Proton Pump Inhibitors

**Lanthanum**

- Antibacterials: lanthanum possibly reduces absorption of ● **QUINOLONES** (give at least 2 hours before or 4 hours after lanthanum)
- Antifungals: lanthanum possibly reduces absorption of ● **KETOCONAZOLE** (give at least 2 hours apart)
- Antimalarials: lanthanum possibly reduces absorption of ● **CHLOROQUINE** and ● **HYDROXYCHLOROQUINE** (give at least 2 hours apart)
- Thyroid Hormones: lanthanum reduces absorption of ● **LEVOTHYROXINE** (give at least 2 hours apart)

**Lapatinib**

- Antibacterials: manufacturer of lapatinib advises avoid concomitant use with ● **RIFABUTIN**, ● **RIFAMPICIN** and ● **TELITHROMYCIN**

**Lapatinib** (continued)

- Antidepressants: manufacturer of lapatinib advises avoid concomitant use with ● **ST JOHN'S WORT**
- Antidiabetics: manufacturer of lapatinib advises avoid concomitant use with ● **REPAGLINIDE**
- Antiepileptics: plasma concentration of lapatinib reduced by ● **CARBAMAZEPINE**—avoid concomitant use; manufacturer of lapatinib advises avoid concomitant use with ● **FOSPHENYTOIN** and ● **PHENYTOIN**
- Antifungals: plasma concentration of lapatinib increased by ● **KETOCONAZOLE**—avoid concomitant use; manufacturer of lapatinib advises avoid concomitant use with ● **ITRACONAZOLE**, ● **POSACONAZOLE** and ● **VORICONAZOLE**
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis); manufacturer of lapatinib advises avoid concomitant use with ● **PIMOZIDE**
- Antivirals: avoidance of lapatinib advised by manufacturer of ● **BOCEPREVIR**; manufacturer of lapatinib advises avoid concomitant use with ● **RITONAVIR** and ● **SAQUINAVIR**
- Cytotoxics: lapatinib increases plasma concentration of ● **PAZOPANIB**; possible increased risk of neutropenia when lapatinib given with ● **DOCETAXEL**; increased risk of neutropenia when lapatinib given with ● **PACLITAXEL**; lapatinib increases plasma concentration of active metabolite of ● **IRINOTECAN**—consider reducing dose of irinotecan
- Grapefruit Juice: manufacturer of lapatinib advises avoid concomitant use with ● **GRAPEFRUIT JUICE**
- Lipid-regulating Drugs: separating administration from lapatinib by 12 hours advised by manufacturer of ● **LOMITAPIDE**
- Ulcer-healing Drugs: absorption of lapatinib possibly reduced by ● **HISTAMINE H<sub>2</sub>-ANTAGONISTS** and ● **PROTON PUMP INHIBITORS**

**Laronidase**

- Antimalarials: effects of laronidase possibly inhibited by ● **CHLOROQUINE** and ● **HYDROXYCHLOROQUINE** (manufacturer of laronidase advises avoid concomitant use)

**Leflunomide**

- NOTE** Increased risk of toxicity with other haematotoxic and hepatotoxic drugs
- Antibacterials: plasma concentration of active metabolite of leflunomide possibly increased by ● **RIFAMPICIN**
- Anticoagulants: leflunomide possibly enhances anticoagulant effect of ● **WARFARIN**
- Antidiabetics: leflunomide possibly enhances hypoglycaemic effect of ● **TOLBUTAMIDE**
- Antiepileptics: leflunomide possibly increases plasma concentration of ● **FOSPHENYTOIN** and ● **PHENYTOIN**
- Cytotoxics: risk of toxicity when leflunomide given with ● **METHOTREXATE**
- Lipid-regulating Drugs: the effect of leflunomide is significantly decreased by ● **COLESTYRAMINE** (enhanced elimination)—avoid unless drug elimination desired
- Vaccines: risk of generalised infections when leflunomide given with live ● **VACCINES**—avoid concomitant use

**Lenalidomide**

- Antibacterials: plasma concentration of lenalidomide possibly increased by ● **CLARITHROMYCIN** (increased risk of toxicity)
- Antifungals: plasma concentration of lenalidomide possibly increased by ● **ITRACONAZOLE** and ● **KETOCONAZOLE** (increased risk of toxicity)
- Calcium-channel Blockers: plasma concentration of lenalidomide possibly increased by ● **VERAPAMIL** (increased risk of toxicity)
- Cardiac Glycosides: lenalidomide possibly increases plasma concentration of ● **DIGOXIN**
- Ciclosporin: plasma concentration of lenalidomide possibly increased by ● **CICLOSPORIN** (increased risk of toxicity)

**Lercanidipine** see Calcium-channel Blockers

**Leukotriene Receptor Antagonists**

- Aminophylline: zafirlukast possibly increases plasma concentration of ● **AMINOPHYLLINE**, also plasma concentration of zafirlukast reduced
- Analgesics: plasma concentration of zafirlukast increased by ● **ASPIRIN**
- Antibacterials: plasma concentration of zafirlukast reduced by ● **ERYTHROMYCIN**

**Leukotriene Receptor Antagonists** (continued)

- Anticoagulants: zafirlukast enhances anticoagulant effect of **WARFARIN**
- Antiepileptics: plasma concentration of montelukast reduced by **PHENOBARBITAL** and **PRIMIDONE**
- Antifungals: plasma concentration of zafirlukast increased by **FLUCONAZOLE**
- Lipid-regulating Drugs: plasma concentration of montelukast increased by **GEMFIBROZIL**
- Theophylline: zafirlukast possibly increases plasma concentration of **THEOPHYLLINE**, also plasma concentration of zafirlukast reduced

**Levamisole**

- Alcohol: possibility of disulfiram-like reaction when levamisole given with **ALCOHOL**
- Anthemelmintics: plasma concentration of both drugs possibly reduced when levamisole given with **ALBENDAZOLE**; levamisole possibly increases plasma concentration of **IVERMECTIN**
- Anticoagulants: levamisole possibly enhances anticoagulant effect of **WARFARIN**
- Antiepileptics: levamisole possibly increases plasma concentration of **FOSPHENYTOIN** and **PHENYTOIN**

**Levetiracetam**

- Antidepressants: anticonvulsant effect of antiepileptics possibly antagonised by **MAOIS** and **TRICYCLIC-RELATED ANTIDEPRESSANTS** (convulsive threshold lowered); anticonvulsant effect of antiepileptics antagonised by **SSRIS** and **TRICYCLICS** (convulsive threshold lowered)
- Antiepileptics: levetiracetam possibly increases risk of **CARBAMAZEPINE** toxicity
- Antimalarials: anticonvulsant effect of antiepileptics antagonised by **MEFLOQUINE**
- Antipsychotics: anticonvulsant effect of antiepileptics antagonised by **ANTIPSYCHOTICS** (convulsive threshold lowered)
- Orlistat: possible increased risk of convulsions when antiepileptics given with **ORLISTAT**

**Levobunolol** see Beta-blockers**Levobupivacaine**

- Anti-arrhythmics: increased myocardial depression when levobupivacaine given with **ANTI-ARRHYTHMICS**

**Levocarnitine**

- Anticoagulants: levocarnitine possibly enhances anticoagulant effect of **COUMARINS**

**Levocetirizine** see Antihistamines**Levodopa**

- ACE Inhibitors: enhanced hypotensive effect when levodopa given with **ACE INHIBITORS**
- Adrenergic Neurone Blockers: enhanced hypotensive effect when levodopa given with **ADRENERGIC NEURONE BLOCKERS**
- Alpha-blockers: enhanced hypotensive effect when levodopa given with **ALPHA-BLOCKERS**
- Anaesthetics, General: increased risk of arrhythmias when levodopa given with **VOLATILE LIQUID GENERAL ANAESTHETICS**
- Angiotensin-II Receptor Antagonists: enhanced hypotensive effect when levodopa given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- Antibacterials: effects of levodopa possibly reduced by **ISONIAZID**
- Antidepressants: risk of hypertensive crisis when levodopa given with **MAOIS**, avoid levodopa for at least 2 weeks after stopping MAOIs; increased risk of side-effects when levodopa given with **MOCLOBEMIDE**
- Antiepileptics: effects of levodopa possibly reduced by **FOSPHENYTOIN** and **PHENYTOIN**
- Antimuscarinics: absorption of levodopa possibly reduced by **ANTIMUSCARINICS**
- Antipsychotics: effects of levodopa antagonised by **ANTIPSYCHOTICS**; avoidance of levodopa advised by manufacturer of **AMISULPRIDE** (antagonism of effect)
- Anxiolytics and Hypnotics: effects of levodopa possibly antagonised by **BENZODIAZEPINES**
- Beta-blockers: enhanced hypotensive effect when levodopa given with **BETA-BLOCKERS**

**Levodopa** (continued)

- Bupropion: increased risk of side-effects when levodopa given with **BUPROPION**
- Calcium-channel Blockers: enhanced hypotensive effect when levodopa given with **CALCIUM-CHANNEL BLOCKERS**
- Clonidine: enhanced hypotensive effect when levodopa given with **CLONIDINE**
- Diazoxide: enhanced hypotensive effect when levodopa given with **DIAZOXIDE**
- Diuretics: enhanced hypotensive effect when levodopa given with **DIURETICS**
- Dopaminergics: enhanced effects and increased toxicity of levodopa when given with **SELEGILINE** (reduce dose of levodopa)
- Iron Salts: absorption of levodopa possibly reduced by **oral IRON SALTS**
- Memantine: effects of dopaminergics possibly enhanced by **MEMANTINE**
- Methyldopa: enhanced hypotensive effect when levodopa given with **METHYLDOPA**; antiparkinsonian effect of dopaminergics antagonised by **METHYLDOPA**
- Moxonidine: enhanced hypotensive effect when levodopa given with **MOXONIDINE**
- Muscle Relaxants: possible agitation, confusion and hallucinations when levodopa given with **BACLOFEN**
- Nitrates: enhanced hypotensive effect when levodopa given with **NITRATES**
- Vasodilator Antihypertensives: enhanced hypotensive effect when levodopa given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**
- Vitamins: effects of levodopa reduced by **PYRIDOXINE** when given without dopa-decarboxylase inhibitor

**Levofloxacin** see Quinolones**Levofolinic Acid** see Folate**Levomepromazine** see Antipsychotics**Levonorgestrel** see Progestogens**Levothyroxine** see Thyroid Hormones**Lidocaine****NOTE** Interactions less likely when lidocaine used topically

- Anaesthetics, Local: increased myocardial depression when anti-arrhythmics given with **BUPIVACAINES**, **LEVOBUPIVACAINES**, **PRILOCAINE** or **ROPIVACAINES**
- Anti-arrhythmics: increased myocardial depression when anti-arrhythmics given with other **ANTI-ARRHYTHMICS**
- Antipsychotics: increased risk of ventricular arrhythmias when anti-arrhythmics that prolong the QT interval given with **ANTIPSYCHOTICS** that prolong the QT interval
- Antivirals: plasma concentration of lidocaine possibly increased by **ATAZANAVIR** and **LOPINAVIR**; plasma concentration of lidocaine possibly increased by **DARUNAVIR** and **FOSAMPRENAVIR**—avoid concomitant use; increased risk of ventricular arrhythmias when lidocaine given with **SAQUINAVIR**—avoid concomitant use; caution with *intravenous* lidocaine advised by manufacturer of **TELAPREVIR**
- Beta-blockers: increased myocardial depression when anti-arrhythmics given with **BETA-BLOCKERS**; possible increased risk of lidocaine toxicity when given with **NADOLOL**; increased risk of lidocaine toxicity when given with **PROPRANOLOL**
- Diuretics: action of lidocaine antagonised by hypokalaemia caused by **ACETAZOLAMIDE**, **LOOP DIURETICS** or **THIAZIDES AND RELATED DIURETICS**
- Muscle Relaxants: neuromuscular blockade enhanced and prolonged when lidocaine given with **SUXAMETHONIUM**
- Ulcer-healing Drugs: plasma concentration of lidocaine increased by **CIMETIDINE** (increased risk of toxicity)

**Linagliptin** see Antidiabetics**Linezolid****NOTE** Linezolid is a reversible, non-selective MAO inhibitor—see interactions of MAOIs

- Antibacterials: plasma concentration of linezolid reduced by **RIFAMPICIN** (possible therapeutic failure of linezolid)
- Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Liothyronine** see Thyroid Hormones

**Lipegfilgrastim**

- ▶ Cytotoxics: neutropenia possibly exacerbated when lepegfilgrastim given with **CAPECITABINE**, **FLUOROURACIL** or **TEGAFUR**

**Lipid-regulating Drugs** see Colesevelam, Colestipol, Colestyramine, Ezetimibe, Fibrates, Lomitapide, Nicotinic Acid, and Statins

**Liraglutide** see Antidiabetics

**Lisdexamfetamine** see Sympathomimetics

**Lisinopril** see ACE Inhibitors

**Lithium**

- ACE Inhibitors: excretion of lithium reduced by ● **ACE INHIBITORS** (increased plasma concentration)
- ▶ Aminophylline: excretion of lithium increased by **AMINOPHYLLINE** (reduced plasma concentration)
- Analgesics: excretion of lithium reduced by ● **NSAIDS** (increased risk of toxicity); excretion of lithium reduced by ● **KETOROLAC** (increased risk of toxicity)—avoid concomitant use
- Angiotensin-II Receptor Antagonists: excretion of lithium reduced by ● **ANGIOTENSIN-II RECEPTOR ANTAGONISTS** (increased plasma concentration)
- ▶ Antacids: excretion of lithium increased by **SODIUM BICARBONATE** (reduced plasma concentration)
- Anti-arrhythmics: avoidance of lithium advised by manufacturer of ● **AMIODARONE** (risk of ventricular arrhythmias)
- ▶ Antibacterials: increased risk of lithium toxicity when given with **METRONIDAZOLE**
- Antidepressants: possible increased serotonergic effects when lithium given with **VENLAFAXINE**; increased risk of CNS effects when lithium given with ● **SSRIS** (lithium toxicity reported); risk of toxicity when lithium given with **TRICYCLICS**
- ▶ Antiepileptics: neurotoxicity may occur when lithium given with **CARBAMAZEPINE**, **FOSPHENYTOIN** or **PHENYTOIN** without increased plasma concentration of lithium; plasma concentration of lithium possibly affected by **TOPIRAMATE**
- Antipsychotics: increased risk of extrapyramidal side-effects and possibly neurotoxicity when lithium given with **CLOZAPINE**, **FLUPENTIXOL**, **HALOPERIDOL**, **PHENOTHIAZINES**, ● **RISPERIDONE** or **ZUCLOPENTHIXOL**; possible risk of toxicity when lithium given with **OLANZAPINE**; lithium possibly increases extrapyramidal side-effects of **QUETIAPINE**; increased risk of extrapyramidal side-effects when lithium given with **SULPIRIDE**
- ▶ Anxiolytics and Hypnotics: increased risk of neurotoxicity when lithium given with **CLONAZEPAM**
- ▶ Calcium-channel Blockers: neurotoxicity may occur when lithium given with **DILTIAZEM** or **VERAPAMIL** without increased plasma concentration of lithium
- Cytotoxics: increased risk of ventricular arrhythmias when lithium given with ● **ARSENIC TRIOXIDE**
- Dapoxetine: possible increased risk of serotonergic effects when lithium given with ● **DAPOXETINE** (manufacturer of dapoxetine advises lithium should not be started until 1 week after stopping dapoxetine, avoid dapoxetine for 2 weeks after stopping lithium)
- Diuretics: excretion of lithium increased by ● **ACETAZOLAMIDE**; excretion of lithium reduced by ● **LOOP DIURETICS** and ● **THIAZIDES AND RELATED DIURETICS** (increased plasma concentration and risk of toxicity)—loop diuretics safer than thiazides; excretion of lithium reduced by ● **POTASSIUM-SPARING DIURETICS AND ALDOSTERONE ANTAGONISTS** (increased plasma concentration and risk of toxicity)
- ▶ 5HT<sub>1</sub>-receptor Agonists: possible risk of toxicity when lithium given with **SUMATRIPTAN**
- Methylidopa: neurotoxicity may occur when lithium given with ● **METHYLDOPA** without increased plasma concentration of lithium
- ▶ Muscle Relaxants: lithium enhances effects of **MUSCLE RELAXANTS**; hyperkinesia caused by lithium possibly aggravated by **BACLOFEN**
- ▶ Parasympathomimetics: lithium antagonises effects of **NEOSTIGMINE**

**Lithium** (continued)

- ▶ Theophylline: excretion of lithium increased by **THEOPHYLLINE** (reduced plasma concentration)

**Lixisenatide** see Antidiabetics

**Lofepamine** see Antidepressants, Tricyclic

**Lofexidine**

- ▶ Alcohol: increased sedative effect when lofexidine given with **ALCOHOL**
- ▶ Anxiolytics and Hypnotics: increased sedative effect when lofexidine given with **ANXIOLYTICS AND HYPNOTICS**

**Lomitapide**

- ▶ Alcohol: manufacturer of lomitapide advises avoid concomitant use with **ALCOHOL**
- Anti-arrhythmics: manufacturer of lomitapide advises separating administration from **AMIODARONE** by 12 hours; manufacturer of lomitapide advises avoid concomitant use with ● **DRONEDARONE** (plasma concentration of lomitapide possibly increased)
- Antibacterials: manufacturer of lomitapide advises separating administration from **AZITHROMYCIN** and **ISONIAZID** by 12 hours; manufacturer of lomitapide advises avoid concomitant use with ● **CLARITHROMYCIN**, ● **ERYTHROMYCIN** and ● **TELITHROMYCIN** (plasma concentration of lomitapide possibly increased)
- ▶ Anticoagulants: lomitapide possibly enhances anticoagulant effect of **WARFARIN**
- ▶ Antidepressants: manufacturer of lomitapide advises separating administration from **FLUOXETINE** and **FLUVOXAMINE** by 12 hours
- ▶ Antidiabetics: manufacturer of lomitapide advises separating administration from **LINAGLIPTIN** by 12 hours
- Antifungals: plasma concentration of lomitapide increased by ● **KETOCONAZOLE**—avoid concomitant use; manufacturer of lomitapide advises avoid concomitant use with ● **TRIAZOLES** (plasma concentration of lomitapide possibly increased)
- Antivirals: manufacturer of lomitapide advises avoid concomitant use with ● **DARUNAVIR**, ● **FOSAPRENAVIR**, ● **INDINAVIR**, ● **LOPINAVIR**, ● **RITONAVIR**, ● **SAQUINAVIR**, ● **TELAPREVIR** and ● **TIPRANAVIR** (plasma concentration of lomitapide possibly increased)
- ▶ Anxiolytics and Hypnotics: manufacturer of lomitapide advises separating administration from **ALPRAZOLAM** by 12 hours
- Calcium-channel Blockers: manufacturer of lomitapide advises separating administration from **AMLODIPINE** and **LACIDIPINE** by 12 hours; manufacturer of lomitapide advises avoid concomitant use with ● **DILTIAZEM** and ● **VERAPAMIL** (plasma concentration of lomitapide possibly increased)
- ▶ Ciclosporin: manufacturer of lomitapide advises separating administration from **CICLOSPORIN** by 12 hours
- ▶ Clostazol: manufacturer of lomitapide advises separating administration from **CLOSTAZOL** by 12 hours
- ▶ Cytotoxics: manufacturer of lomitapide advises separating administration from **LAPATINIB**, **NILOTINIB** and **PAZOPANIB** by 12 hours
- ▶ Fosaprepitant: manufacturer of lomitapide advises separating administration from **FOSAPREPITANT** by 12 hours
- ▶ Grapefruit Juice: manufacturer of lomitapide advises avoid concomitant use with **GRAPEFRUIT JUICE**
- ▶ Hormone Antagonists: manufacturer of lomitapide advises separating administration from **BICALUTAMIDE** by 12 hours
- ▶ Ivacaftor: manufacturer of lomitapide advises separating administration from **IVACAFTOR** by 12 hours
- Lipid-regulating Drugs: lomitapide increases plasma concentration of **ATORVASTATIN**—manufacturer of lomitapide advises reduce dose of atorvastatin by half or separate administration by 12 hours; lomitapide increases plasma concentration of ● **SIMVASTATIN** (see under Simvastatin, p. 181); absorption of lomitapide possibly reduced by **BILE ACID SEQUESTRANTS** (give at least 4 hours apart)
- ▶ Oestrogens: manufacturer of lomitapide advises separating administration from **OESTROGENS** by 12 hours
- ▶ Ranolazine: manufacturer of lomitapide advises separating administration from **RANOLAZINE** by 12 hours
- ▶ Tacrolimus: manufacturer of lomitapide advises separating administration from **TACROLIMUS** by 12 hours
- ▶ Ticagrelor: manufacturer of lomitapide advises separating administration from **TICAGRELOR** by 12 hours

**Lomitapide** (continued)

- ▶ Tolvaptan: manufacturer of lomitapide advises separating administration from **TOLVAPTAN** by 12 hours
- ▶ Ulcer-healing Drugs: manufacturer of lomitapide advises separating administration from **CIMETIDINE** and **RANITIDINE** by 12 hours

**Lomustine**

- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- ▶ Ulcer-healing Drugs: myelosuppressive effects of lomustine possibly enhanced by **CIMETIDINE**

**Loperamide**

- ▶ Desmopressin: loperamide increases plasma concentration of oral **DESMOPRESSIN**

**Lopinavir**

**NOTE** In combination with ritonavir as **Kaletra**® (ritonavir is present to inhibit lopinavir metabolism and increase plasma-lopinavir concentration)—see also Ritonavir

- Anti-arrhythmics: lopinavir possibly increases plasma concentration of ● **FLCAINIDE** (increased risk of ventricular arrhythmias—avoid concomitant use); lopinavir possibly increases plasma concentration of **LIDOCAINE**
- Antibacterials: plasma concentration of lopinavir reduced by ● **RIFAMPICIN**—avoid concomitant use; lopinavir increases plasma concentration of **DELAMANID**; avoidance of concomitant lopinavir in severe renal and hepatic impairment advised by manufacturer of ● **TELITHROMYCIN**
- ▶ Anticoagulants: avoidance of lopinavir advised by manufacturer of **APIXABAN**; manufacturers advise avoid concomitant use of lopinavir with **RIVAROXABAN**
- Antidepressants: plasma concentration of lopinavir reduced by ● **ST JOHN'S WORT**—avoid concomitant use
- Antiepileptics: plasma concentration of lopinavir possibly reduced by **CARBAMAZEPINE**, **FOSPHENYTOIN**, ● **PHENOBARBITAL**, **PHENYTOIN** and ● **PRIMIDONE**
- ▶ Antihistamines: lopinavir possibly increases plasma concentration of **CHLORPHENAMINE**
- ▶ Antimalarials: caution with lopinavir advised by manufacturer of **ARTEMETHER WITH LUMEFANTRINE**
- ▶ Antimuscarinics: avoidance of lopinavir advised by manufacturer of **DARIFENACIN** and **TOLTERODINE**
- Antipsychotics: lopinavir possibly increases plasma concentration of ● **ARIPRAZOLE** (reduce dose of aripiprazole—consult aripiprazole product literature); lopinavir possibly increases plasma concentration of ● **QUETIAPINE**—manufacturer of quetiapine advises avoid concomitant use
- Antivirals: manufacturers advise avoid concomitant use of lopinavir with ● **BOCEPREVIR** and ● **TELAPREVIR**; avoidance of lopinavir advised by manufacturer of **DACLATASVIR** (plasma concentration of daclatasvir possibly increased); lopinavir reduces plasma concentration of ● **DARUNAVIR**, also plasma concentration of lopinavir increased (avoid concomitant use); plasma concentration of lopinavir reduced by ● **EFAVIRENZ**—consider increasing dose of lopinavir; lopinavir boosted with ritonavir increases plasma concentration of ● **ELVITEGRAVIR** (reduce dose of elvitegravir); lopinavir reduces plasma concentration of **FOSAMPRENAVIR**, effect on lopinavir plasma concentration not predictable—avoid concomitant use; lopinavir increases plasma concentration of ● **MARAVIROC** (consider reducing dose of maraviroc); plasma concentration of lopinavir possibly reduced by ● **NEVIRAPINE**—consider increasing dose of lopinavir; increased risk of ventricular arrhythmias when lopinavir given with ● **SAQUINAVIR**—avoid concomitant use; lopinavir increases plasma concentration of **TENOFOVIR**; plasma concentration of lopinavir reduced by ● **TIPRANAVIR**
- Bosentan: lopinavir increases plasma concentration of ● **BOSENTAN** (consider reducing dose of bosentan)
- ▶ Corticosteroids: plasma concentration of lopinavir possibly reduced by **DEXAMETHASONE**
- Cytotoxics: manufacturer of ruxolitinib advises dose reduction when lopinavir given with ● **RUXOLITINIB**—consult ruxolitinib product literature
- ▶ Eltrombopag: lopinavir possibly reduces plasma concentration of **ELTROMBOPAG**

**Lopinavir** (continued)

- Lipid-regulating Drugs: possible increased risk of myopathy when lopinavir given with **ATORVASTATIN**; lopinavir increases plasma concentration of ● **ROSUVASTATIN**—adjust dose of rosuvastatin (consult product literature); possible increased risk of myopathy when lopinavir given with ● **SIMVASTATIN**—avoid concomitant use; avoidance of lopinavir advised by manufacturer of ● **LOMITAPIDE** (plasma concentration of lomitapide possibly increased)
- Orlistat: absorption of lopinavir possibly reduced by ● **ORLISTAT**
- Ranolazine: lopinavir possibly increases plasma concentration of ● **RANOLAZINE**—manufacturer of ranolazine advises avoid concomitant use
- ▶ Sirolimus: lopinavir possibly increases plasma concentration of **SIROLIMUS**
- ▶ Sympathomimetics, Beta<sub>2</sub>: manufacturer of lopinavir advises avoid concomitant use with **SALMETEROL**

**Loprazolam** see Anxiolytics and Hypnotics

**Loratadine** see Antihistamines

**Lorazepam** see Anxiolytics and Hypnotics

**Lormetazepam** see Anxiolytics and Hypnotics

**Losartan** see Angiotensin-II Receptor Antagonists

**Lurasidone** see Antipsychotics

**Lymecycline** see Tetracyclines

**Macitentan**

- Antibacterials: plasma concentration of macitentan reduced by ● **RIFAMPICIN**—avoid concomitant use
- ▶ Antidepressants: manufacturer of macitentan advises avoid concomitant use with **ST JOHN'S WORT**
- ▶ Antiepileptics: manufacturer of macitentan advises avoid concomitant use with **CARBAMAZEPINE**, **FOSPHENYTOIN** and **PHENYTOIN**
- ▶ Antifungals: plasma concentration of macitentan increased by **KETOCONAZOLE**

**Macrogols**

**NOTE** Some manufacturers suggest taking other oral medication 1 hour before or 1 hour after macrogols to reduce possible interference with absorption

**Macrolides**

**NOTE** See also Telithromycin

**NOTE** Interactions do not apply to small amounts of erythromycin used topically

- Aminophylline: clarithromycin possibly increases plasma concentration of **AMINOPHYLLINE**; erythromycin increases plasma concentration of ● **AMINOPHYLLINE** (also aminophylline may reduce absorption of *oral* erythromycin)
- ▶ Analgesics: erythromycin increases plasma concentration of **ALFENTANIL**; clarithromycin possibly increases plasma concentration of **FENTANYL**
- ▶ Antacids: absorption of azithromycin reduced by **ANTACIDS**
- Anti-arrhythmics: increased risk of ventricular arrhythmias when *parenteral* erythromycin given with ● **AMIODARONE**—avoid concomitant use; azithromycin possibly increases plasma concentration of ● **DISOPYRAMIDE** (increased risk of toxicity); erythromycin increases plasma concentration of ● **DISOPYRAMIDE** (increased risk of toxicity); clarithromycin possibly increases plasma concentration of ● **DISOPYRAMIDE** (increased risk of ventricular arrhythmias); avoidance of clarithromycin advised by manufacturer of ● **DRONEDARONE** (risk of ventricular arrhythmias); erythromycin increases plasma concentration of ● **DRONEDARONE** (increased risk of ventricular arrhythmias—avoid concomitant use)
- Antibacterials: increased risk of ventricular arrhythmias when *parenteral* erythromycin given with ● **MOXIFLOXACIN**—avoid concomitant use; increased risk of side-effects including neutropenia when azithromycin given with ● **RIFABUTIN**; clarithromycin increases plasma concentration of ● **RIFABUTIN** (increased risk of toxicity—reduce rifabutin dose); erythromycin possibly increases plasma concentration of ● **RIFABUTIN** (increased risk of toxicity—reduce rifabutin dose); clarithromycin and erythromycin possibly increase plasma concentration of **BEDAQUILINE**—avoid concomitant use if clarithromycin and erythromycin given for more than 14 days; possible increased risk of ventricular arrhythmias



**Macrolides**

- **Antibacterials** (continued)
  - when clarithromycin and erythromycin given with
    - **DELAMAND**; avoidance of clarithromycin and erythromycin advised by manufacturer of **FIDAXOMICIN**; plasma concentration of clarithromycin reduced by **RIFAMYCINS**
- **Anticoagulants**: avoidance of clarithromycin advised by manufacturer of **APIXABAN**; clarithromycin and erythromycin enhance anticoagulant effect of • **COUMARINS**; azithromycin possibly enhances anticoagulant effect of • **COUMARINS**; possible increased risk of bleeding when clarithromycin given with **DABIGATRAN**
- **Antidepressants**: avoidance of macrolides advised by manufacturers of • **REBOXETINE**; avoidance of *intravenous* erythromycin advised by manufacturer of • **CITALOPRAM** and • **ESCITALOPRAM** (risk of ventricular arrhythmias); clarithromycin possibly increases plasma concentration of **TRAZODONE**
- **Antidiabetics**: clarithromycin enhances effects of **REPAGLINIDE**
- **Antiepileptics**: clarithromycin increases plasma concentration of • **CARBAMAZEPINE** (consider reducing dose of carbamazepine); erythromycin increases plasma concentration of • **CARBAMAZEPINE**; clarithromycin inhibits metabolism of **FOSPHENYTOIN** and **PHENYTOIN** (increased plasma concentration); erythromycin possibly inhibits metabolism of **SODIUM VALPROATE** and **VALPROIC ACID** (increased plasma concentration)
- **Antifungals**: avoidance of concomitant clarithromycin in severe renal impairment advised by manufacturer of • **KETOCONAZOLE**; avoidance of erythromycin advised by manufacturer of **FLUCONAZOLE**; clarithromycin increases plasma concentration of **ITRACONAZOLE**
- **Antihistamines**: manufacturer of loratadine advises erythromycin possibly increases plasma concentration of **LORATADINE**; macrolides possibly inhibit metabolism of • **MIZOLASTINE** (avoid concomitant use); erythromycin inhibits metabolism of • **MIZOLASTINE**—avoid concomitant use
- **Antimalarials**: avoidance of macrolides advised by manufacturer of • **ARTEMETHER WITH LUMEFRANTINE**; avoidance of macrolides advised by manufacturer of • **ARTENIMOL WITH PIPERAQUINE** (possible risk of ventricular arrhythmias)
- **Antimuscarinics**: erythromycin possibly increases plasma concentration of **DARIFENACIN**; manufacturer of fesoterodine advises dose reduction when clarithromycin given with **FESOTERODINE**—consult fesoterodine product literature; avoidance of clarithromycin and erythromycin advised by manufacturer of **TOLTERODINE**
- **Antipsychotics**: avoidance of macrolides advised by manufacturer of • **DROPERIDOL** (risk of ventricular arrhythmias); increased risk of ventricular arrhythmias when *parenteral* erythromycin given with • **ZUCLOPENTHIXOL**—avoid concomitant use; increased risk of ventricular arrhythmias when erythromycin given with • **AMISULPRIDE**—avoid concomitant use; erythromycin possibly increases plasma concentration of • **CLOZAPINE** (possible increased risk of convulsions); clarithromycin possibly increases plasma concentration of • **LURASIDONE**—avoid concomitant use; erythromycin possibly increases the plasma concentration of • **LURASIDONE** (see under Lurasidone, p. 315); increased risk of ventricular arrhythmias when clarithromycin given with • **PIMOZIDE**—avoid concomitant use; possible increased risk of ventricular arrhythmias when erythromycin given with • **PIMOZIDE**—avoid concomitant use; clarithromycin possibly increases plasma concentration of • **QUETIAPINE**—manufacturer of quetiapine advises avoid concomitant use; erythromycin increases plasma concentration of • **QUETIAPINE**—manufacturer of quetiapine advises avoid concomitant use; increased risk of ventricular arrhythmias when *parenteral* erythromycin given with • **SULPRIDE**
- **Antivirals**: plasma concentration of both drugs increased when clarithromycin given with **ATAZANAVIR**; clarithromycin possibly increases the plasma concentration of • **DACLATASVIR**—reduce dose of daclatasvir (see under Daclatasvir, p. 544); plasma concentration of clarithromycin reduced by **EFAVIRENZ**, also plasma concentration of active

**Macrolides**

- **Antivirals** (continued)
  - metabolite of clarithromycin increased; plasma concentration of clarithromycin reduced by • **ETRAVIRINE** and **NEVIRAPINE** (but concentration of an active metabolite increased), also plasma concentration of etravirine and nevirapine increased; clarithromycin possibly increases plasma concentration of • **MARAVIROC** (consider reducing dose of maraviroc); avoidance of clarithromycin and erythromycin advised by manufacturer of • **RILPIVIRINE** (plasma concentration of rilpivirine possibly increased); plasma concentration of azithromycin and erythromycin possibly increased by **RITONAVIR**; plasma concentration of clarithromycin increased by • **RITONAVIR** (reduce dose of clarithromycin in renal impairment); increased risk of ventricular arrhythmias when erythromycin given with • **SAQUINAVIR**—avoid concomitant use; plasma concentration of both drugs possibly increased when clarithromycin given with • **SAQUINAVIR** and • **TELAPEVIR** (increased risk of ventricular arrhythmias); plasma concentration of both drugs increased when erythromycin given with • **SIMEPREVIR**—manufacturer of simeprevir advises avoid concomitant use; clarithromycin possibly increases plasma concentration of • **SIMEPREVIR**—manufacturer of simeprevir advises avoid concomitant use; plasma concentration of both drugs possibly increased when erythromycin given with • **TELAPEVIR** (increased risk of ventricular arrhythmias); plasma concentration of clarithromycin increased by • **TIPRANAVIR** (reduce dose of clarithromycin in renal impairment), also clarithromycin increases plasma concentration of tipranavir; clarithromycin tablets reduce absorption of **ZIDOVUDINE** (give at least 2 hours apart)
- **Anxiolytics and Hypnotics**: clarithromycin and erythromycin inhibit metabolism of • **MIDAZOLAM** (increased plasma concentration with increased sedation); erythromycin increases plasma concentration of **BUSPIRONE** (reduce dose of buspirone); erythromycin inhibits the metabolism of **ZOPICLONE**
- **Appetizants**: clarithromycin possibly increases plasma concentration of **APREPITANT**
- **Atomoxetine**: increased risk of ventricular arrhythmias when *parenteral* erythromycin given with • **ATOMOXETINE**
- **Avanafil**: clarithromycin possibly increases plasma concentration of • **AVANAFIL**—manufacturer of avanafil advises avoid concomitant use; erythromycin increases plasma concentration of • **AVANAFIL**—see under Avanafil, p. 698
- **Calcium-channel Blockers**: clarithromycin and erythromycin possibly inhibit metabolism of • **CALCIUM-CHANNEL BLOCKERS** (increased risk of side-effects); avoidance of erythromycin advised by manufacturer of **LERCANDIPINE**
- **Cardiac Glycosides**: macrolides increase plasma concentration of **DIGOXIN** (increased risk of toxicity)
- **Ciclosporin**: macrolides possibly inhibit metabolism of • **CICLOSPORIN** (increased plasma concentration); clarithromycin and erythromycin inhibit metabolism of • **CICLOSPORIN** (increased plasma concentration)
- **Cilostazol**: clarithromycin possibly increases plasma concentration of • **CILOSTAZOL** (see under Cilostazol, p. 206); erythromycin increases plasma concentration of • **CILOSTAZOL** (see under Cilostazol, p. 206)
- **Clopidogrel**: erythromycin possibly reduces antiplatelet effect of • **CLOPIDOGREL**
- **Colchicine**: azithromycin, clarithromycin and erythromycin possibly increase risk of • **COLCHICINE** toxicity—suspend or reduce dose of colchicine (avoid concomitant use in hepatic or renal impairment)
- **Corticosteroids**: erythromycin possibly inhibits metabolism of **CORTICOSTEROIDS**; erythromycin inhibits the metabolism of **METHYLPREDNISOLONE**; clarithromycin possibly increases plasma concentration of **METHYLPREDNISOLONE**
- **Cytotoxics**: erythromycin possibly increases the plasma concentration of **AFAFINIB**—manufacturer of afatinib advises separating administration of erythromycin by 6 to 12 hours; clarithromycin and erythromycin possibly increase plasma concentration of **AXITINIB** (reduce dose of axitinib—consult

**Macrolides**

## ● Cytotoxics (continued)

- axitinib product literature); clarithromycin and erythromycin possibly increase the plasma concentration of ● **BOSUTINIB**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib; clarithromycin and erythromycin possibly increase plasma concentration of ● **CABOZANTINIB**; clarithromycin possibly increases plasma concentration of ● **CRIZOTINIB** and ● **EVEROLIMUS**—manufacturer of crizotinib and everolimus advises avoid concomitant use; avoidance of clarithromycin and erythromycin advised by manufacturer of ● **DASATINIB** (plasma concentration of dasatinib possibly increased); erythromycin increases plasma concentration of ● **EVEROLIMUS** (consider reducing the dose of everolimus—consult everolimus product literature); clarithromycin and erythromycin possibly increase the plasma concentration of ● **IBRUTINIB**—reduce dose of ibrutinib (see under Ibrutinib, p. 809); avoidance of clarithromycin advised by manufacturer of ● **NILOTINIB**; clarithromycin possibly increases plasma concentration of ● **PAZOPANIB** (reduce dose of pazopanib); clarithromycin possibly increases plasma concentration of ● **PONATINIB**—consider reducing initial dose of ponatinib (see under Ponatinib, p. 814); manufacturer of ruxolitinib advises dose reduction when clarithromycin given with ● **RUXOLITINIB**—consult ruxolitinib product literature; possible increased risk of ventricular arrhythmias when *parenteral* erythromycin given with ● **VANDETANIB**—avoid concomitant use; clarithromycin possibly increases the plasma concentration of ● **CABAZITAXEL**—manufacturer of cabazitaxel advises avoid or consider reducing dose of cabazitaxel; clarithromycin possibly increases plasma concentration of ● **DOCETAXEL**—manufacturer of docetaxel advises avoid concomitant use or consider reducing docetaxel dose; increased risk of ventricular arrhythmias when erythromycin given with ● **ARSENIC TRIOXIDE**; erythromycin increases toxicity of ● **VINBLASTINE**—avoid concomitant use; possible increased risk of neutropenia when clarithromycin given with ● **VINORELBINE**
- ▷ Dapoxetine: manufacturer of dapoxetine advises dose reduction when clarithromycin and erythromycin given with ● **DAPOXETINE** (see under Dapoxetine, p. 703)
- Diuretics: clarithromycin increases plasma concentration of ● **EPLERENONE**—avoid concomitant use; erythromycin increases plasma concentration of ● **EPLERENONE** (reduce dose of eplerenone)
- Domperidone: possible increased risk of ventricular arrhythmias when clarithromycin given with ● **DOMPERIDONE**—avoid concomitant use; erythromycin increases plasma concentration of ● **DOMPERIDONE** (increased risk of ventricular arrhythmias—avoid concomitant use)
- ▷ Dopaminergics: erythromycin increases plasma concentration of ● **BROMOCRIPTINE** and ● **CABERGOLINE** (increased risk of toxicity); macrolides possibly increase plasma concentration of ● **BROMOCRIPTINE** and ● **CABERGOLINE** (increased risk of toxicity)
- Ergot Alkaloids: increased risk of ergotism when clarithromycin or erythromycin given with ● **ERGOMETRINE**—avoid concomitant use; increased risk of ergotism when macrolides given with ● **ERGOTAMINE**—avoid concomitant use
- ▷ Fosaprepitant: clarithromycin possibly increases plasma concentration of ● **FOSAPREPITANT**
- 5HT<sub>2</sub>-receptor Agonists: clarithromycin and erythromycin increase plasma concentration of ● **ELETRIPTAN** (risk of toxicity)—avoid concomitant use
- Ivabradine: clarithromycin possibly increases plasma concentration of ● **IVABRADINE**—avoid concomitant use; increased risk of ventricular arrhythmias when erythromycin given with ● **IVABRADINE**—avoid concomitant use
- Ivacaftor: clarithromycin and erythromycin possibly increase plasma concentration of ● **IVACAFTOR** (see under Ivacaftor, p. 257)
- Lenalidomide: clarithromycin possibly increases plasma concentration of ● **LENALIDOMIDE** (increased risk of toxicity)
- ▷ Leukotriene Receptor Antagonists: erythromycin reduces plasma concentration of ● **ZAFIRLUKAST**
- Lipid-regulating Drugs: clarithromycin increases plasma concentration of ● **ATORVASTATIN** and ● **PRAVASTATIN**; possible

**Macrolides**

## ● Lipid-regulating Drugs (continued)

- increased risk of myopathy when erythromycin given with ● **ATORVASTATIN**; erythromycin increases plasma concentration of ● **PRAVASTATIN**; erythromycin reduces plasma concentration of ● **ROSUVASTATIN**; increased risk of myopathy when clarithromycin or erythromycin given with ● **SIMVASTATIN** (avoid concomitant use); separating administration from azithromycin by 12 hours advised by manufacturer of ● **LOMITAPIDE**; avoidance of clarithromycin and erythromycin advised by manufacturer of ● **LOMITAPIDE** (plasma concentration of lomitapide possibly increased)
  - ▷ Mirabegron: when given with clarithromycin avoid or reduce dose of ● **MIRABEGRON** in hepatic or renal impairment—see Mirabegron, p. 671
  - ▷ Oestrogens: erythromycin increases plasma concentration of ● **ESTRADIOL**
  - ▷ Parasympathomimetics: erythromycin increases plasma concentration of ● **GALANTAMINE**
  - Pentamidine Isetionate: increased risk of ventricular arrhythmias when *parenteral* erythromycin given with ● **PENTAMIDINE ISETIONATE**
  - ▷ Progestogens: erythromycin increases plasma concentration of ● **DENOGEST**
  - Ranolazine: clarithromycin possibly increases plasma concentration of ● **RANOLAZINE**—manufacturer of ranolazine advises avoid concomitant use
  - Sildenafil: clarithromycin increases the plasma concentration of ● **SILDENAFIL**—consider reducing initial dose of sildenafil for erectile dysfunction or reduce sildenafil dose frequency to once daily for pulmonary hypertension; erythromycin increases plasma concentration of ● **SILDENAFIL**—reduce initial dose of sildenafil for erectile dysfunction or reduce sildenafil dose frequency to twice daily for pulmonary hypertension
  - Sirolimus: clarithromycin increases plasma concentration of ● **SIROLIMUS**—avoid concomitant use; plasma concentration of both drugs increased when erythromycin given with ● **SIROLIMUS**
  - Tacrolimus: clarithromycin and erythromycin increase plasma concentration of ● **TACROLIMUS**
  - ▷ Tadalafil: clarithromycin and erythromycin possibly increase plasma concentration of ● **TADALAFIL**
  - Theophylline: clarithromycin possibly increases plasma concentration of ● **THEOPHYLLINE**; erythromycin increases plasma concentration of ● **THEOPHYLLINE** (also theophylline may reduce absorption of *oral* erythromycin)
  - Ticagrelor: clarithromycin possibly increases plasma concentration of ● **TICAGRELOR**—manufacturer of ticagrelor advises avoid concomitant use; erythromycin possibly increases plasma concentration of ● **TICAGRELOR**
  - ▷ Ulcer-healing Drugs: plasma concentration of erythromycin increased by ● **CIMETIDINE** (increased risk of toxicity, including deafness); plasma concentration of both drugs increased when clarithromycin given with ● **OMEPRAZOLE**
  - ▷ Ulipristal: avoidance of clarithromycin advised by manufacturer of *low-dose* ● **ULIPRISTAL**; erythromycin increases plasma concentration of *low-dose* ● **ULIPRISTAL**—manufacturer of *low-dose* ulipristal advises avoid concomitant use
  - ▷ Vaccines: antibacterials inactivate ● **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF
  - ▷ Vardenafil: clarithromycin possibly increases plasma concentration of ● **VARDENAFIL** (consider reducing initial dose of vardenafil); erythromycin increases plasma concentration of ● **VARDENAFIL** (reduce dose of vardenafil)
- Magnesium (parenteral)**
- Calcium-channel Blockers: profound hypotension reported with concomitant use of parenteral magnesium and ● **NIFEDIPINE** in pre-eclampsia
  - ▷ Muscle Relaxants: parenteral magnesium enhances effects of ● **NON-DEPOLARISING MUSCLE RELAXANTS** and ● **SUXAMETHONIUM**
- Magnesium Salts (oral)** see Antacids
- Mannitol**
- ▷ Antibacterials: avoidance of mannitol advised by manufacturer of ● **TOBRAMYCIN**

**Mannitol** (continued)

- Ciclosporin: possible increased risk of nephrotoxicity when mannitol given with **CYCLOSPORIN**

**MAOIs**

**NOTE** For interactions of reversible MAO-A inhibitors (RIMAs) see Moclobemide, and for interactions of MAO-B inhibitors see Rasagiline and Selegiline; the antibacterial Linezolid is a reversible, non-selective MAO inhibitor

- ACE Inhibitors: MAOIs possibly enhance hypotensive effect of **ACE INHIBITORS**
- Adrenergic Neurone Blockers: enhanced hypotensive effect when MAOIs given with **ADRENERGIC NEURONE BLOCKERS**
- Alcohol: MAOIs interact with tyramine found in some beverages containing ● **ALCOHOL** and some dealcoholised beverages (hypertensive crisis)—if no tyramine, enhanced hypotensive effect
- $\alpha_2$ -adrenoceptor Stimulants: avoidance of MAOIs advised by manufacturer of **APRACLONIDINE** and **BRIMONIDINE**
- Alpha-blockers: avoidance of MAOIs advised by manufacturer of ● **INDORAMIN**; enhanced hypotensive effect when MAOIs given with **ALPHA-BLOCKERS**
- Analgesics: possible increased serotonergic effects when MAOIs given with **FENTANYL**; CNS excitation or depression (hypertension or hypotension) when MAOIs given with ● **PETHIDINE**—avoid concomitant use and for 2 weeks after stopping MAOIs; possible increased serotonergic effects and increased risk of convulsions when MAOIs given with ● **TRAMADOL**—some manufacturers advise avoid concomitant use and for 2 weeks after stopping MAOIs; avoidance of MAOIs advised by manufacturer of ● **NEFOPAM**; possible CNS excitation or depression (hypertension or hypotension) when MAOIs given with ● **OPIOID ANALGESICS**—some manufacturers advise avoid concomitant use and for 2 weeks after stopping MAOIs
- Angiotensin-II Receptor Antagonists: MAOIs possibly enhance hypotensive effect of **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- Antidepressants: increased risk of hypertension and CNS excitation when MAOIs given with ● **REBOXETINE** (MAOIs should not be started until 1 week after stopping reboxetine, avoid reboxetine for 2 weeks after stopping MAOIs); after stopping MAOIs do not start ● **CITALOPRAM**, ● **ESCITALOPRAM**, ● **FLUVOXAMINE**, ● **PAROXETINE** or ● **SERTRALINE** for 2 weeks, also MAOIs should not be started until at least 1 week after stopping citalopram, escitalopram, fluvoxamine, paroxetine or sertraline; after stopping MAOIs do not start ● **FLUOXETINE** for 2 weeks, also MAOIs should not be started until at least 5 weeks after stopping fluoxetine; after stopping MAOIs do not start ● **DULOXETINE** for 2 weeks, also MAOIs should not be started until at least 5 days after stopping duloxetine; enhanced CNS effects and toxicity when MAOIs given with ● **VENLAFAXINE** (venlafaxine should not be started until 2 weeks after stopping MAOIs, avoid MAOIs for 1 week after stopping venlafaxine); increased risk of hypertension and CNS excitation when MAOIs given with other ● **MAOIs** (avoid for at least 2 weeks after stopping previous MAOIs and then start at a reduced dose); after stopping MAOIs do not start ● **MOCLOBEMIDE** for at least 1 week; MAOIs increase CNS effects of ● **SSRIS** (risk of serious toxicity); after stopping MAOIs do not start ● **MIRTAZAPINE** for 2 weeks, also MAOIs should not be started until at least 2 weeks after stopping mirtazapine; after stopping MAOIs do not start ● **TRICYCLIC-RELATED ANTIDEPRESSANTS** for 2 weeks, also MAOIs should not be started until at least 1–2 weeks after stopping tricyclic-related antidepressants; increased risk of hypertension and CNS excitation when MAOIs given with ● **TRICYCLICS**, tricyclics should not be started until 2 weeks after stopping MAOIs (3 weeks if starting clomipramine or imipramine), also MAOIs should not be started for at least 1–2 weeks after stopping tricyclics (3 weeks in the case of clomipramine or imipramine)
- Antidiabetics: MAOIs possibly enhance hypoglycaemic effect of **ANTIIDIABETICS**; MAOIs enhance hypoglycaemic effect of **INSULIN**, **METFORMIN** and **SULFONYLUREAS**
- Antiepileptics: MAOIs possibly antagonise anticonvulsant effect of **ANTIEPILEPTICS** (convulsive threshold lowered);

**MAOIs****Antiepileptics** (continued)

- avoidance for 2 weeks after stopping MAOIs advised by manufacturer of ● **CARBAMAZEPINE**, also antagonism of anticonvulsant effect
- Antihistamines: avoidance of MAOIs advised by manufacturer of **HYDROXYZINE**; avoidance of promethazine for 2 weeks after stopping MAOIs advised by manufacturer of **PROMETHAZINE**; increased antimuscarinic and sedative effects when MAOIs given with **ANTIHISTAMINES**
- Antimalarials: avoidance of antidepressants advised by manufacturer of ● **ARTEMETHER WITH LUMEFANTRINE** and ● **ARTENIMOL WITH PIPERAQUINE**
- Antimuscarinics: increased risk of antimuscarinic side-effects when MAOIs given with **ANTIMUSCARINICS**
- Antipsychotics: CNS effects of MAOIs possibly increased by ● **CLOZAPINE**
- Anxiolytics and Hypnotics: avoidance of MAOIs advised by manufacturer of **BUSPIRONE**; manufacturer of tranlylcypromine advises avoid ● **BUSPIRONE** for 14 days after stopping tranlylcypromine
- Atomoxetine: after stopping MAOIs do not start ● **ATOMOXETINE** for 2 weeks, also MAOIs should not be started until at least 2 weeks after stopping atomoxetine; possible increased risk of convulsions when antidepressants given with **ATOMOXETINE**
- Beta-blockers: enhanced hypotensive effect when MAOIs given with **BETA-BLOCKERS**
- Bupropion: avoidance of bupropion for 2 weeks after stopping MAOIs advised by manufacturer of ● **BUPROPION**
- Calcium-channel Blockers: enhanced hypotensive effect when MAOIs given with **CALCIUM-CHANNEL BLOCKERS**
- Clonidine: enhanced hypotensive effect when MAOIs given with **CLONIDINE**
- Dapoxetine: increased risk of serotonergic effects when MAOIs given with ● **DAPOXETINE** (MAOIs should not be started until 1 week after stopping dapoxetine, avoid dapoxetine for 2 weeks after stopping MAOIs)
- Diazoxide: enhanced hypotensive effect when MAOIs given with **DIAZOXIDE**
- Diuretics: enhanced hypotensive effect when MAOIs given with **DIURETICS**
- Dopaminergics: risk of hypertensive crisis when MAOIs given with ● **CO-BENELDOPA**, ● **CO-CARELDOPA** or ● **LEVODOPA**, avoid co-beneldopa, co-careldopa or levodopa for at least 2 weeks after stopping MAOIs; avoid concomitant use of non-selective MAOIs with ● **ENTACAPONE**; risk of hypertensive crisis when MAOIs given with ● **RASAGILINE**, avoid MAOIs for at least 2 weeks after stopping rasagiline; enhanced hypotensive effect when MAOIs given with ● **SELEGILINE**—manufacturer of selegiline advises avoid concomitant use; avoid concomitant use of MAOIs with **TOLCAPONE**
- Doxapram: MAOIs enhance effects of **DOXAPRAM**
- Histamine: avoidance of MAOIs advised by manufacturer of **HISTAMINE**
- 5HT<sub>2</sub>-receptor Agonists: risk of CNS toxicity when MAOIs given with ● **RIZATRIPATAN** or ● **SUMATRIPATAN** (avoid rizatriptan or sumatriptan for 2 weeks after MAOIs); risk of CNS toxicity when MAOIs given with ● **ZOLMITRIPATAN** (reduce dose of zolmitriptan)
- Methylidopa: avoidance of MAOIs advised by manufacturer of ● **METHYLDOPA**
- Moxonidine: enhanced hypotensive effect when MAOIs given with **MOXONIDINE**
- Muscle Relaxants: phenelzine enhances effects of **SUXAMETHONIUM**
- Nicorandil: enhanced hypotensive effect when MAOIs given with **NICORANDIL**
- Nitrates: enhanced hypotensive effect when MAOIs given with **NITRATES**
- Pholcodine: avoidance of pholcodine for 2 weeks after stopping MAOIs advised by manufacturer of **PHOLCODINE**
- Sympathomimetics: risk of hypertensive crisis when MAOIs given with ● **ADRENALINE (EPINEPHRINE)**, ● **DOBUTAMINE**, ● **DOPAMINE**, ● **NORADRENALINE (NOREPINEPHRINE)** or ● **XYLOMETAZOLINE**; risk of hypertensive crisis when MAOIs given with ● **DEXAMFETAMINE**, ● **EPHEDRINE**, ● **ISOMETHEPTENE**,

**MAOIs**

- Sympathomimetics (continued)
  - **LISDEXAMFETAMINE**, • **METARAMINOL**, • **METHYLPHENIDATE**, • **PHENYLEPHRINE** or • **PSEUDOEPHEDRINE**, avoid dexamfetamine, ephedrine, isometheptene, lisdexamfetamine, metaraminol, methylphenidate, phenylephrine or pseudoephedrine for at least 2 weeks after stopping MAOIs; risk of hypertensive crisis when MAOIs given with • **OXYMETAZOLINE**, some manufacturers advise avoid oxymetazoline for at least 2 weeks after stopping MAOIs
- Tetrabenazine: risk of CNS toxicity when MAOIs given with • **TETRABENZAZINE** (avoid tetrabenazine for 2 weeks after MAOIs)
- ▶ Vasodilator Antihypertensives: enhanced hypotensive effect when MAOIs given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**

**MAOIs, reversible** see Moclobemide

**Maraviroc**

- Antibacterials: plasma concentration of maraviroc possibly increased by • **CLARITHROMYCIN** and • **TELITHROMYCIN** (consider reducing dose of maraviroc); plasma concentration of maraviroc reduced by • **RIFAMPICIN**—consider increasing dose of maraviroc
- Antidepressants: plasma concentration of maraviroc possibly reduced by • **ST JOHN'S WORT**—avoid concomitant use
- Antifungals: plasma concentration of maraviroc increased by • **KETOCONAZOLE** (consider reducing dose of maraviroc)
- Antivirals: plasma concentration of maraviroc increased by • **ATAZANAVIR**, **BOCEPREVIR**, • **DARUNAVIR**, • **INDINAVIR**, • **LOPINAVIR**, • **SAQUINAVIR** and **TELAPREVIR** (consider reducing dose of maraviroc); plasma concentration of maraviroc possibly reduced by • **EFAVIRENZ**—consider increasing dose of maraviroc; plasma concentration of maraviroc possibly reduced by **ETRAVIRINE**; maraviroc reduces plasma concentration of • **FOSAMPRENAVIR**—avoid concomitant use; plasma concentration of maraviroc increased by **RITONAVIR**
- Cobicistat: plasma concentration of maraviroc possibly increased by • **COBICISTAT** (reduce dose of maraviroc)
- Orlistat: absorption of maraviroc possibly reduced by • **ORLISTAT**

**Mebendazole**

- ▶ Ulcer-healing Drugs: metabolism of mebendazole possibly inhibited by **CIMETIDINE** (increased plasma concentration)

**Medroxyprogesterone** see Progestogens

**Mefenamic acid** see NSAIDs

**Mefloquine**

- Anti-arrhythmics: increased risk of ventricular arrhythmias when mefloquine given with • **AMIODARONE**—avoid concomitant use
- Antibacterials: increased risk of ventricular arrhythmias when mefloquine given with • **MOXIFLOXACIN**—avoid concomitant use; plasma concentration of mefloquine reduced by • **RIFAMPICIN**—avoid concomitant use
- Antiepileptics: mefloquine antagonises anticonvulsant effect of • **ANTIEPILEPTICS**
- ▶ Antifungals: plasma concentration of mefloquine increased by **KETOCONAZOLE**
- Antimalarials: avoidance of antimalarials advised by manufacturer of • **ARTEMETHER WITH LUMEFANTRINE**; increased risk of convulsions when mefloquine given with • **CHLOROQUINE** or • **HYDROXYCHLOROQUINE**; increased risk of convulsions when mefloquine given with • **QUININE** (but should not prevent the use of *intravenous* quinine in severe cases)
- Antipsychotics: possible increased risk of ventricular arrhythmias when mefloquine given with • **HALOPERIDOL**—avoid concomitant use; avoidance of mefloquine advised by manufacturer of **AMISULPRIDE**; increased risk of ventricular arrhythmias when mefloquine given with • **PIMOZIDE**—avoid concomitant use; manufacturer of risperidone advises possible risk of ventricular arrhythmias when mefloquine given with • **RISPERIDONE**
- ▶ Antivirals: mefloquine possibly reduces plasma concentration of **RITONAVIR**

**Mefloquine** (continued)

- Atomoxetine: increased risk of ventricular arrhythmias when mefloquine given with • **ATOMOXETINE**
- ▶ Beta-blockers: increased risk of bradycardia when mefloquine given with **BETA-BLOCKERS**
- ▶ Calcium-channel Blockers: possible increased risk of bradycardia when mefloquine given with **CALCIUM-CHANNEL BLOCKERS**
- ▶ Cardiac Glycosides: possible increased risk of bradycardia when mefloquine given with **DIGOXIN**
- ▶ Cytotoxics: possible increased risk of bradycardia when mefloquine given with **CRIZOTINIB**
- ▶ Histamine: avoidance of antimalarials advised by manufacturer of **HISTAMINE**
- Ivabradine: increased risk of ventricular arrhythmias when mefloquine given with • **IVABRADINE**
- ▶ Vaccines: antimalarials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Megestrol** see Progestogens

**Melatonin** see Anxiolytics and Hypnotics

**Meloxicam** see NSAIDs

**Melphalan**

- Antibacterials: increased risk of melphalan toxicity when given with **NALIDIXIC ACID**
- Antipsychotics: avoid concomitant use of cytotoxics with • **CLOZAPINE** (increased risk of agranulocytosis)
- ▶ Cardiac Glycosides: melphalan possibly reduces absorption of **DIGOXIN tablets**
- Ciclosporin: increased risk of nephrotoxicity when melphalan given with • **CICLOSPORIN**

**Memantine**

- Anaesthetics, General: increased risk of CNS toxicity when memantine given with • **KETAMINE** (manufacturer of memantine advises avoid concomitant use)
- Analgesics: increased risk of CNS toxicity when memantine given with • **DEXTROMETHORPHAN** (manufacturer of memantine advises avoid concomitant use)
- ▶ Anticoagulants: memantine possibly enhances anticoagulant effect of **WARFARIN**
- ▶ Antimuscarinics: memantine possibly enhances effects of **ANTIMUSCARINICS**
- ▶ Antipsychotics: memantine possibly reduces effects of **ANTIPSYCHOTICS**
- Dopaminergics: memantine possibly enhances effects of **DOPAMINERGICS** and **SELEGILINE**; increased risk of CNS toxicity when memantine given with • **AMANTADINE** (manufacturer of memantine advises avoid concomitant use)
- ▶ Muscle Relaxants: memantine possibly modifies effects of **BACLOFEN** and **DANTROLENE**

**Meningococcal Vaccines** see Vaccines

**Mepacrine**

- ▶ Antimalarials: mepacrine increases plasma concentration of **PRIMAQUINE** (increased risk of toxicity)

**Meprobamate** see Anxiolytics and Hypnotics

**Mepizanol** see Opioid Analgesics

**Mercaptopurine**

- Allopurinol: enhanced effects and increased toxicity of mercaptopurine when given with • **ALLOPURINOL** (reduce dose of mercaptopurine to one quarter of usual dose)
- Antibacterials: increased risk of haematological toxicity when mercaptopurine given with • **SULFAMETHOXAZOLE** (as co-trimoxazole); increased risk of haematological toxicity when mercaptopurine given with • **TRIMETHOPRIM** (also with co-trimoxazole)
- Anticoagulants: mercaptopurine possibly reduces anticoagulant effect of • **COUMARINS**
- Antipsychotics: avoid concomitant use of cytotoxics with • **CLOZAPINE** (increased risk of agranulocytosis)
- ▶ Dairy Products: plasma concentration of mercaptopurine possibly reduced by **DAIRY PRODUCTS**—manufacturer of mercaptopurine advises give at least 1 hour before or 2 hours after dairy products
- Febuxostat: avoidance of mercaptopurine advised by manufacturer of • **FEBUXOSTAT**



**Meropenem**

- Antiepileptics: carbapenems reduce plasma concentration of
  - **SODIUM VALPROATE** and • **VALPROIC ACID**—avoid concomitant use
- ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid vaccine in BNF

**Mestranol** see Oestrogens**Metaraminol** see Sympathomimetics**Metformin** see Antidiabetics**Methadone** see Opioid Analgesics**Methenamine**

- ▶ Antacids: avoid concomitant use of methenamine with **ANTACIDS**
- Antibacterials: increased risk of crystalluria when methenamine given with • **SULFONAMIDES**
- Diuretics: effects of methenamine antagonised by
  - **ACETAZOLAMIDE**
- ▶ Potassium Salts: avoid concomitant use of methenamine with **POTASSIUM CITRATE**
- ▶ Sodium Citrate: avoid concomitant use of methenamine with **SODIUM CITRATE**
- ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Methocarbamol** see Muscle Relaxants**Methotrexate**

- ▶ Aminophylline: methotrexate possibly increases plasma concentration of **AMINOPHYLLINE**
- Anaesthetics, General: antifolate effect of methotrexate increased by • **NITROUS OXIDE**—avoid concomitant use
- Analgesics: excretion of methotrexate probably reduced by
  - **NSAIDS** (increased risk of toxicity); excretion of methotrexate reduced by • **ASPIRIN**, • **DICLOFENAC**, • **IBUPROFEN**, • **INDOMETACIN**, • **KETOPROFEN**, • **MELOXICAM** and • **NAPROXEN** (increased risk of toxicity)
- Antibacterials: absorption of methotrexate possibly reduced by **NEOMYCIN**; excretion of methotrexate possibly reduced by **CIPROFLOXACIN** (increased risk of toxicity); increased risk of haematological toxicity when methotrexate given with
  - **SULFAMETHOXAZOLE** (as co-trimoxazole); increased risk of methotrexate toxicity when given with **DOXYCYCLINE**, **SULFONAMIDES** or **TETRACYCLINE**; excretion of methotrexate reduced by **PENICILLINS** (increased risk of toxicity); increased risk of haematological toxicity when methotrexate given with
    - **TRIMETHOPRIM** (also with co-trimoxazole)
- ▶ Antiepileptics: antifolate effect of methotrexate increased by **FOSPHENITOIN** and **PHENYTOIN**
- Antimalarials: antifolate effect of methotrexate increased by
  - **PYRIMETHAMINE**
- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)
- ▶ Cardiac Glycosides: methotrexate possibly reduces absorption of **DIGOXIN tablets**
- Ciclosporin: risk of toxicity when methotrexate given with
  - **CICLOSPORIN**
- Corticosteroids: possible increased risk of hepatotoxicity when *high-dose* methotrexate given with **DEXAMETHASONE**
- Cytotoxics: increased pulmonary toxicity when methotrexate given with • **CISPLATIN**
- ▶ Diuretics: excretion of methotrexate increased by alkaline urine due to **ACETAZOLAMIDE**
- Leflunomide: risk of toxicity when methotrexate given with
  - **LEFLUNOMIDE**
- Retinoids: plasma concentration of methotrexate increased by
  - **ACITRETIN** (also increased risk of hepatotoxicity)—avoid concomitant use
- ▶ Theophylline: methotrexate possibly increases plasma concentration of **THEOPHYLLINE**
- ▶ Ulcer-healing Drugs: excretion of methotrexate possibly reduced by **PROTON PUMP INHIBITORS** (increased risk of toxicity)

**Methyldopa**

- ▶ ACE Inhibitors: enhanced hypotensive effect when methyldopa given with **ACE INHIBITORS**
- ▶ Adrenergic Neurone Blockers: enhanced hypotensive effect when methyldopa given with **ADRENERGIC NEURONE BLOCKERS**

**Methyldopa** (continued)

- ▶ Alcohol: enhanced hypotensive effect when methyldopa given with **ALCOHOL**
- ▶ Aldesleukin: enhanced hypotensive effect when methyldopa given with **ALDESLEUKIN**
- ▶ Alpha-blockers: enhanced hypotensive effect when methyldopa given with **ALPHA-BLOCKERS**
- ▶ Anaesthetics, General: enhanced hypotensive effect when methyldopa given with **GENERAL ANAESTHETICS**
- ▶ Analgesics: hypotensive effect of methyldopa antagonised by **NSAIDS**
- ▶ Angiotensin-II Receptor Antagonists: enhanced hypotensive effect when methyldopa given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- Antidepressants: manufacturer of methyldopa advises avoid concomitant use with • **MAOIS**
- ▶ Antipsychotics: enhanced hypotensive effect when methyldopa given with **ANTIPSYCHOTICS** (also increased risk of extrapyramidal effects)
- ▶ Anxiolytics and Hypnotics: enhanced hypotensive effect when methyldopa given with **ANXIOLYTICS AND HYPNOTICS**
- ▶ Beta-blockers: enhanced hypotensive effect when methyldopa given with **BETA-BLOCKERS**
- ▶ Calcium-channel Blockers: enhanced hypotensive effect when methyldopa given with **CALCIUM-CHANNEL BLOCKERS**
- ▶ Clonidine: enhanced hypotensive effect when methyldopa given with **CLONIDINE**
- ▶ Corticosteroids: hypotensive effect of methyldopa antagonised by **CORTICOSTEROIDS**
- ▶ Diazoxide: enhanced hypotensive effect when methyldopa given with **DIAZOXIDE**
- ▶ Diuretics: enhanced hypotensive effect when methyldopa given with **DIURETICS**
- ▶ Dopaminergics: methyldopa antagonises antiparkinsonian effect of **DOPAMINERGICS**; increased risk of extrapyramidal side-effects when methyldopa given with **AMANTADINE**; enhanced hypotensive effect when methyldopa given with **CO-BENELDOPA**, **CO-CARELDOPA** or **LEVODOPA**; effects of methyldopa possibly enhanced by **ENTACAPONE**
- ▶ Iron Salts: hypotensive effect of methyldopa antagonised by *oral* **IRON SALTS**
- Lithium: neurotoxicity may occur when methyldopa given with • **LITHIUM** without increased plasma concentration of lithium
- ▶ Moxisylyte: enhanced hypotensive effect when methyldopa given with **MOXISYLYTE**
- ▶ Moxonidine: enhanced hypotensive effect when methyldopa given with **MOXONIDINE**
- ▶ Muscle Relaxants: enhanced hypotensive effect when methyldopa given with **BACLOFEN** or **TIZANIDINE**
- ▶ Nitrates: enhanced hypotensive effect when methyldopa given with **NITRATES**
- ▶ Oestrogens: hypotensive effect of methyldopa antagonised by **OESTROGENS**
- ▶ Prostaglandins: enhanced hypotensive effect when methyldopa given with **ALPROSTADIL**
- Sympathomimetics, Beta: acute hypotension reported when methyldopa given with *infusion* of • **SALBUTAMOL**
- ▶ Vasodilator Antihypertensives: enhanced hypotensive effect when methyldopa given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**

**Methylphenidate** see Sympathomimetics**Methylprednisolone** see Corticosteroids**Methylthioninium**

- Antidepressants: risk of CNS toxicity when methylthioninium given with • **SSRI-RELATED ANTIDEPRESSANTS**, • **SSRIS** and • **CLOMIPRAMINE**—avoid concomitant use (if avoidance not possible, use lowest possible dose of methylthioninium and observe patient for up to 4 hours after administration); possible risk of CNS toxicity when methylthioninium given with • **MIRTAZAPINE**—avoid concomitant use (if avoidance not possible, use lowest possible dose of methylthioninium and observe patient for up to 4 hours after administration)
- Anxiolytics and Hypnotics: possible risk of CNS toxicity when methylthioninium given with • **BUSPIRONE**—avoid concomitant use (if avoidance not possible, use lowest

**Methylthioninium**

- Anxiolytics and Hypnotics (continued)  
possible dose of methylthioninium and observe patient for up to 4 hours after administration)
- Bupropion: possible risk of CNS toxicity when methylthioninium given with • **BUPROPION**—avoid concomitant use (if avoidance not possible, use lowest possible dose of methylthioninium and observe patient for up to 4 hours after administration)

**Metoclopramide**

- ▶ Alcohol: metoclopramide possibly increases absorption of **ALCOHOL**
- ▶ Anaesthetics, General: metoclopramide enhances effects of **THIOPENTAL**
- ▶ Analgesics: metoclopramide increases rate of absorption of **ASPIRIN** (enhanced effect); effects of metoclopramide on gastro-intestinal activity antagonised by **OPIOID ANALGESICS**; metoclopramide increases rate of absorption of **PARACETAMOL**
- ▶ Antibacterials: metoclopramide reduces plasma concentration of **FOSFOMYCIN**
- ▶ Antidepressants: CNS toxicity reported when metoclopramide given with **SSRIS**
- ▶ Antimuscarinics: effects of metoclopramide on gastro-intestinal activity antagonised by **ANTIMUSCARINICS**
- ▶ Antipsychotics: increased risk of extrapyramidal side-effects when metoclopramide given with **ANTIPSYCHOTICS**
- ▶ Atovaquone: metoclopramide reduces plasma concentration of **ATOVAQUONE**—avoid concomitant use
- Clozapine: metoclopramide increases plasma concentration of • **CICLOSPORIN**
- ▶ Dopaminergics: metoclopramide antagonises hypoprolactinaemic effects of **BROMOCRIPTINE** and **CABERGOLINE**; metoclopramide antagonises antiparkinsonian effect of **PERGOLIDE**; avoidance of metoclopramide advised by manufacturer of **ROPINIROLE** and **ROTIGOTINE** (antagonism of effect)
- ▶ Muscle Relaxants: metoclopramide enhances effects of **SUXAMETHONIUM**
- ▶ Tetrabenazine: increased risk of extrapyramidal side-effects when metoclopramide given with **TETRABENAZINE**

**Metolazone** see Diuretics**Metoprolol** see Beta-blockers**Metronidazole****NOTE** Interactions do not apply to topical metronidazole preparations

- ▶ Alcohol: disulfiram-like reaction when metronidazole given with **ALCOHOL**
- Anticoagulants: metronidazole enhances anticoagulant effect of • **COUMARINS**
- ▶ Antiepileptics: metronidazole possibly inhibits metabolism of **FOSPHENYTOIN** and **PHENYTOIN** (increased plasma concentration); metabolism of metronidazole accelerated by **PHENOBARBITAL** and **PRIMIDONE** (reduced effect)
- Cytotoxics: metronidazole increases plasma concentration of • **BUSULFAN** (increased risk of toxicity); metronidazole inhibits metabolism of **CAPECITABINE**, **FLUOROURACIL** and **TEGAFUR** (increased toxicity)
- ▶ Disulfiram: psychotic reaction reported when metronidazole given with **DISULFIRAM**
- ▶ Lithium: metronidazole increases risk of **LITHIUM** toxicity
- ▶ Mycophenolate: metronidazole possibly reduces bioavailability of **MYCOPHENOLATE**
- ▶ Ulcer-healing Drugs: metabolism of metronidazole inhibited by **CIMETIDINE** (increased plasma concentration)
- ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Mianserin** see Antidepressants, Tricyclic (related)**Micafungin**

- ▶ Antifungals: micafungin possibly increases plasma concentration of **AMPHOTERICIN**; micafungin increases plasma concentration of **ITRACONAZOLE** (consider reducing dose of itraconazole)
- ▶ Calcium-channel Blockers: micafungin increases plasma concentration of **NIFEDIPINE**

**Micafungin** (continued)

- ▶ Clozapine: micafungin possibly increases plasma concentration of **CICLOSPORIN**
- ▶ Sirolimus: micafungin increases plasma concentration of **SIROLIMUS**

**Miconazole** see Antifungals, Imidazole**Midazolam** see Anxiolytics and Hypnotics**Mifamurtide**

- ▶ Analgesics: manufacturer of mifamurtide advises avoid concomitant use with high doses of **NSAIDS**
- ▶ Clozapine: manufacturer of mifamurtide advises avoid concomitant use with **CICLOSPORIN**
- ▶ Corticosteroids: manufacturer of mifamurtide advises avoid concomitant use with **CORTICOSTEROIDS**
- ▶ Tacrolimus: manufacturer of mifamurtide advises avoid concomitant use with **TACROLIMUS**

**Mifepristone**

- ▶ Corticosteroids: mifepristone may reduce effect of **CORTICOSTEROIDS** (including *inhaled* corticosteroids) for 3–4 days

**Milrinone** see Phosphodiesterase Inhibitors**Minocycline** see Tetracyclines**Minoxidil** see Vasodilator Antihypertensives**Mirabegron**

- ▶ Antibacterials: avoid or reduce dose of mirabegron in hepatic or renal impairment when given with **CLARITHROMYCIN**—see Mirabegron, p. 671
- ▶ Antifungals: avoid or reduce dose of mirabegron in hepatic or renal impairment when given with **ITRACONAZOLE** and **KETOCONAZOLE**—see Mirabegron, p. 671
- ▶ Antivirals: avoid or reduce dose of mirabegron in hepatic or renal impairment when given with **RITONAVIR**—see Mirabegron, p. 671
- ▶ Beta-blockers: mirabegron increases plasma concentration of **METOPROLOL**
- ▶ Cardiac Glycosides: mirabegron increases plasma concentration of **DIGOXIN**—reduce initial dose of digoxin

**Mirtazapine**

- Alcohol: increased sedative effect when mirtazapine given with • **ALCOHOL**
- ▶ Analgesics: possible increased serotonergic effects when mirtazapine given with **TRAMADOL**
- ▶ Anticoagulants: mirtazapine enhances anticoagulant effect of **WARFARIN**
- Antidepressants: possible increased serotonergic effects when mirtazapine given with **FLUOXETINE**, **FLUVOXAMINE** or **VENLAFAXINE**; mirtazapine should not be started until 2 weeks after stopping • **MAOIS**, also MAOIs should not be started until at least 2 weeks after stopping mirtazapine; after stopping mirtazapine do not start • **MOCLOBEMIDE** for at least 1 week
- ▶ Antiepileptics: plasma concentration of mirtazapine reduced by **CARBAMAZEPINE**, **FOSPHENYTOIN** and **PHENYTOIN**
- ▶ Antifungals: plasma concentration of mirtazapine increased by **KETOCONAZOLE**
- Antimalarials: avoidance of antidepressants advised by manufacturer of • **ARTEMETHER WITH LUMEFANTRINE** and • **ARTENIMOL WITH PIPERAQUINE**
- ▶ Anxiolytics and Hypnotics: increased sedative effect when mirtazapine given with **ANXIOLYTICS AND HYPNOTICS**
- ▶ Atomoxetine: possible increased risk of convulsions when antidepressants given with **ATOMOXETINE**
- ▶ Clonidine: mirtazapine possibly antagonises hypotensive effect of **CLONIDINE**
- Methylthioninium: possible risk of CNS toxicity when mirtazapine given with • **METHYLTHIONIUM**—avoid concomitant use (if avoidance not possible, use lowest possible dose of methylthioninium and observe patient for up to 4 hours after administration)
- ▶ Ulcer-healing Drugs: plasma concentration of mirtazapine increased by **CIMETIDINE**
- Mitomycin**
- Antipsychotics: avoid concomitant use of cytotoxics with • **CLOZAPINE** (increased risk of agranulocytosis)

**Mitotane**

- Anticoagulants: mitotane possibly reduces anticoagulant effect of **COUMARINS**
- Antipsychotics: avoid concomitant use of cytotoxics with **• CLOZAPINE** (increased risk of agranulocytosis)
- Diuretics: manufacturer of mitotane advises avoid concomitant use of **SPIRONOLACTONE** (antagonism of effect)

**Mitoxantrone**

- Antipsychotics: avoid concomitant use of cytotoxics with **• CLOZAPINE** (increased risk of agranulocytosis)
- Ciclosporin: excretion of mitoxantrone reduced by **CYCLOSPORIN** (increased plasma concentration)

**Mivacurium** see Muscle Relaxants

**Mizolastine** see Antihistamines

**MMR Vaccine** see Vaccines

**Moclobemide**

- Analgesics: possible CNS excitation or depression (hypertension or hypotension) when moclobemide given with **• DEXTROMETHORPHAN** or **• PETHIDINE**—avoid concomitant use; possible CNS excitation or depression (hypertension or hypotension) when moclobemide given with **• OPIOID ANALGESICS**—manufacturer of moclobemide advises consider reducing dose of opioid analgesics
- Antidepressants: moclobemide should not be started for at least 1 week after stopping **• MAOIS**, **• SSRI-RELATED ANTIDEPRESSANTS**, **• CITALOPRAM**, **• FLUVOXAMINE**, **• MIRTAZAPINE**, **• PAROXETINE**, **• SERTRALINE**, **• TRICYCLIC-RELATED ANTIDEPRESSANTS** or **• TRICYCLICS**; increased risk of CNS toxicity when moclobemide given with **• ESCITALOPRAM**, preferably avoid concomitant use; moclobemide should not be started until 5 weeks after stopping **• FLUOXETINE**; possible increased serotonergic effects when moclobemide given with **• DULOXETINE**
- Antimalarials: avoidance of antidepressants advised by manufacturer of **• ARTEMETHER WITH LUMEFANTRINE** and **• ARTEMIMOL WITH PIPERAQUINE**
- Atomoxetine: possible increased risk of convulsions when antidepressants given with **ATOMOXETINE**
- Bupropion: avoidance of moclobemide advised by manufacturer of **• BUPROPION**
- Clopidogrel: moclobemide possibly reduces antiplatelet effect of **• CLOPIDOGREL**
- Dopaminergics: increased risk of side-effects when moclobemide given with **• CO-BENELDOPA**, **• CO-CARELDOPA** or **• LEVODOPA**; caution with moclobemide advised by manufacturer of **• ENTACAPONE**; avoid concomitant use of moclobemide with **• SELEGILINE**
- 5HT<sub>2</sub>-receptor Agonists: risk of CNS toxicity when moclobemide given with **• RIZATRIPTAN** or **• SUMATRIPTAN** (avoid rizatriptan or sumatriptan for 2 weeks after moclobemide); risk of CNS toxicity when moclobemide given with **• ZOLMITRIPTAN** (reduce dose of zolmitriptan)
- Sympathomimetics: risk of hypertensive crisis when moclobemide given with **• SYMPATHOMIMETICS**
- Ulcer-healing Drugs: plasma concentration of moclobemide increased by **CIMETIDINE** (halve dose of moclobemide)

**Modafinil**

- Antiepileptics: modafinil possibly increases plasma concentration of **FOSPHENYTOIN** and **PHENYTOIN**
- Ciclosporin: modafinil reduces plasma concentration of **• CYCLOSPORIN**
- Cytotoxics: modafinil possibly reduces plasma concentration of **• BOSUTINIB**—manufacturer of bosutinib advises avoid concomitant use
- Oestrogens: modafinil accelerates metabolism of **• OESTROGENS** (reduced contraceptive effect with combined oral contraceptives, contraceptive patches, and vaginal rings—see Contraceptive Interactions in BNF)

**Moexipril** see ACE Inhibitors

**Mometasone** see Corticosteroids

**Monobactams** see Aztreonam

**Monoclonal antibodies** see individual drugs

**Montelukast** see Leukotriene Receptor Antagonists

**Morphine** see Opioid Analgesics

**Moxifloxacin** see Quinolones

**Moxisylyte**

- ACE Inhibitors: enhanced hypotensive effect when moxisylyte given with **ACE INHIBITORS**
- Adrenergic Neurone Blockers: enhanced hypotensive effect when moxisylyte given with **ADRENERGIC NEURONE BLOCKERS**
- Alpha-blockers: possible severe postural hypotension when moxisylyte given with **• ALPHA-BLOCKERS**
- Angiotensin-II Receptor Antagonists: enhanced hypotensive effect when moxisylyte given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- Beta-blockers: possible severe postural hypotension when moxisylyte given with **• BETA-BLOCKERS**
- Calcium-channel Blockers: enhanced hypotensive effect when moxisylyte given with **CALCIUM-CHANNEL BLOCKERS**
- Clonidine: enhanced hypotensive effect when moxisylyte given with **CLONIDINE**
- Diazoxide: enhanced hypotensive effect when moxisylyte given with **DIAZOXIDE**
- Diuretics: enhanced hypotensive effect when moxisylyte given with **DIURETICS**
- Methyldopa: enhanced hypotensive effect when moxisylyte given with **METHYLDOPA**
- Moxonidine: enhanced hypotensive effect when moxisylyte given with **MOXONIDINE**
- Nitrates: enhanced hypotensive effect when moxisylyte given with **NITRATES**
- Vasodilator Antihypertensives: enhanced hypotensive effect when moxisylyte given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**

**Moxonidine**

- ACE Inhibitors: enhanced hypotensive effect when moxonidine given with **ACE INHIBITORS**
- Adrenergic Neurone Blockers: enhanced hypotensive effect when moxonidine given with **ADRENERGIC NEURONE BLOCKERS**
- Alcohol: enhanced hypotensive effect when moxonidine given with **ALCOHOL**
- Aldesleukin: enhanced hypotensive effect when moxonidine given with **ALDESLEUKIN**
- Alpha-blockers: enhanced hypotensive effect when moxonidine given with **ALPHA-BLOCKERS**
- Anaesthetics, General: enhanced hypotensive effect when moxonidine given with **GENERAL ANAESTHETICS**
- Analgesics: hypotensive effect of moxonidine antagonised by **NSAIDS**
- Angiotensin-II Receptor Antagonists: enhanced hypotensive effect when moxonidine given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- Antidepressants: enhanced hypotensive effect when moxonidine given with **MAOIS**; hypotensive effect of moxonidine possibly antagonised by **TRICYCLICS** (manufacturer of moxonidine advises avoid concomitant use)
- Antipsychotics: enhanced hypotensive effect when moxonidine given with **PHENOTHIAZINES**
- Anxiolytics and Hypnotics: enhanced hypotensive effect when moxonidine given with **ANXIOLYTICS AND HYPNOTICS**; sedative effects possibly increased when moxonidine given with **BENZODIAZEPINES**
- Beta-blockers: enhanced hypotensive effect when moxonidine given with **BETA-BLOCKERS**
- Calcium-channel Blockers: enhanced hypotensive effect when moxonidine given with **CALCIUM-CHANNEL BLOCKERS**
- Clonidine: enhanced hypotensive effect when moxonidine given with **CLONIDINE**
- Corticosteroids: hypotensive effect of moxonidine antagonised by **CORTICOSTEROIDS**
- Diazoxide: enhanced hypotensive effect when moxonidine given with **DIAZOXIDE**
- Diuretics: enhanced hypotensive effect when moxonidine given with **DIURETICS**
- Dopaminergics: enhanced hypotensive effect when moxonidine given with **• CO-BENELDOPA**, **• CO-CARELDOPA** or **• LEVODOPA**
- Methyldopa: enhanced hypotensive effect when moxonidine given with **METHYLDOPA**
- Moxisylyte: enhanced hypotensive effect when moxonidine given with **MOXISYLYTE**

**Moxonidine** (continued)

- ▶ Muscle Relaxants: enhanced hypotensive effect when moxonidine given with **BACLOFEN** or **TIZANIDINE**
- ▶ Nitrates: enhanced hypotensive effect when moxonidine given with **NITRATES**
- ▶ Oestrogens: hypotensive effect of moxonidine antagonised by **OESTROGENS**
- ▶ Prostaglandins: enhanced hypotensive effect when moxonidine given with **ALPROSTADIL**
- ▶ Vasodilator Antihypertensives: enhanced hypotensive effect when moxonidine given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**

**Muscle Relaxants**

- ▶ ACE Inhibitors: enhanced hypotensive effect when baclofen or tizanidine given with **ACE INHIBITORS**
- ▶ Adrenergic Neurone Blockers: enhanced hypotensive effect when baclofen or tizanidine given with **ADRENERGIC NEURONE BLOCKERS**
- ▶ Alcohol: increased sedative effect when baclofen, methocarbamol or tizanidine given with **ALCOHOL**
- ▶ Alpha-blockers: enhanced hypotensive effect when baclofen or tizanidine given with **ALPHA-BLOCKERS**
- Anaesthetics, General: effects of atracurium enhanced by **KETAMINE**; increased risk of myocardial depression and bradycardia when suxamethonium given with ● **PROPOFOL**; effects of non-depolarising muscle relaxants and suxamethonium enhanced by **VOLATILE LIQUID GENERAL ANAESTHETICS**
- ▶ Analgesics: excretion of baclofen possibly reduced by **NSAIDS** (increased risk of toxicity); excretion of baclofen reduced by **IBUPROFEN** (increased risk of toxicity); increased sedative effect when baclofen given with **FENTANYL** or **MORPHINE**
- ▶ Angiotensin-II Receptor Antagonists: enhanced hypotensive effect when baclofen or tizanidine given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- ▶ Anti-arrhythmics: neuromuscular blockade enhanced and prolonged when suxamethonium given with **LIDOCAINE**
- Antibacterials: effects of non-depolarising muscle relaxants and suxamethonium enhanced by **PIPERACILLIN**; plasma concentration of tizanidine increased by ● **CIPROFLOXACIN** (increased risk of toxicity)—avoid concomitant use; plasma concentration of tizanidine possibly increased by **NORFLOXACIN** (increased risk of toxicity); plasma concentration of tizanidine possibly reduced by **RIFAMPICIN**; effects of non-depolarising muscle relaxants and suxamethonium enhanced by ● **AMINOGLYCOSIDES**; effects of non-depolarising muscle relaxants and suxamethonium enhanced by ● **CLINDAMYCIN**; effects of non-depolarising muscle relaxants and suxamethonium enhanced by ● **POLYMYXINS**; effects of suxamethonium enhanced by ● **VANCOMYCIN**
- Antidepressants: plasma concentration of tizanidine increased by ● **FLUVOXAMINE** (increased risk of toxicity)—avoid concomitant use; effects of suxamethonium enhanced by **PHENELZINE**; muscle relaxant effect of baclofen enhanced by **TRICYCLICS**
- Antiepileptics: muscle relaxant effect of non-depolarising muscle relaxants antagonised by **CARBAMAZEPINE** (accelerated recovery from neuromuscular blockade); effects of non-depolarising muscle relaxants reduced by *long-term use* of ● **FOSPHENYTOIN** and ● **PHENYTOIN** (but effects of non-depolarising muscle relaxants might be increased by *acute* use of fosphenytoin and phenytoin)
- ▶ Antimalarials: effects of suxamethonium possibly enhanced by **QUININE**
- ▶ Antipsychotics: effects of suxamethonium possibly enhanced by **PROMAZINE**
- ▶ Anxiolytics and Hypnotics: increased sedative effect when baclofen or tizanidine given with **ANXIOLYTICS** and **HYPNOTICS**
- ▶ Beta-blockers: enhanced hypotensive effect when baclofen given with **BETA-BLOCKERS**; possible enhanced hypotensive effect and bradycardia when tizanidine given with **BETA-BLOCKERS**; effects of muscle relaxants enhanced by **PROPRANOLOL**
- ▶ Calcium-channel Blockers: enhanced hypotensive effect when baclofen or tizanidine given with **CALCIUM-CHANNEL BLOCKERS**;

**Muscle Relaxants****Calcium-channel Blockers** (continued)

- effects of non-depolarising muscle relaxants possibly enhanced by **CALCIUM-CHANNEL BLOCKERS**; possible increased risk of ventricular arrhythmias when *intravenous* dantrolene given with **DILTIAZEM**—manufacturer of diltiazem advises avoid concomitant use; effects of non-depolarising muscle relaxants and suxamethonium enhanced by **VERAPAMIL**; avoidance of *intravenous* dantrolene advised by manufacturer of **VERAPAMIL**
- ▶ Cardiac Glycosides: possible increased risk of bradycardia when tizanidine given with **CARDIAC GLYCOSIDES**; risk of ventricular arrhythmias when suxamethonium given with **CARDIAC GLYCOSIDES**
- ▶ Clonidine: enhanced hypotensive effect when baclofen or tizanidine given with **CLONIDINE**
- ▶ Corticosteroids: effects of pancuronium and vecuronium possibly antagonised by **CORTICOSTEROIDS**
- ▶ Cytotoxics: effects of suxamethonium enhanced by **CYCLOPHOSPHAMIDE** and **THIOTEPA**
- ▶ Deferasirox: avoidance of tizanidine advised by manufacturer of **DEFERASIROX**
- ▶ Diazoxide: enhanced hypotensive effect when baclofen or tizanidine given with **DIAZOXIDE**
- ▶ Diuretics: enhanced hypotensive effect when baclofen or tizanidine given with **DIURETICS**
- ▶ Dopaminergics: possible agitation, confusion and hallucinations when baclofen given with **CO-BENELDOPA**, **CO-CARELDOPA** or **LEVODOPA**
- ▶ Lithium: effects of muscle relaxants enhanced by **LITHIUM**; baclofen possibly aggravates hyperkinesia caused by **LITHIUM**
- ▶ Magnesium (parenteral): effects of non-depolarising muscle relaxants and suxamethonium enhanced by **PARENTERAL MAGNESIUM**
- ▶ Memantine: effects of baclofen and dantrolene possibly modified by **MEMANTINE**
- ▶ Methyldopa: enhanced hypotensive effect when baclofen or tizanidine given with **METHYLDOPA**
- ▶ Metoclopramide: effects of suxamethonium enhanced by **METOCLOPRAMIDE**
- ▶ Moxonidine: enhanced hypotensive effect when baclofen or tizanidine given with **MOXONIDINE**
- ▶ Nitrates: enhanced hypotensive effect when baclofen or tizanidine given with **NITRATES**
- ▶ Oestrogens: plasma concentration of tizanidine possibly increased by **OESTROGENS** (increased risk of toxicity)
- ▶ Parasympathomimetics: effects of non-depolarising muscle relaxants possibly antagonised by **DONEPEZIL**; effects of suxamethonium possibly enhanced by **DONEPEZIL**; effects of suxamethonium enhanced by **GALANTAMINE**, **NEOSTIGMINE**, **PYRIDOSTIGMINE** and **RIVASTIGMINE**; effects of non-depolarising muscle relaxants antagonised by **NEOSTIGMINE**, **PYRIDOSTIGMINE** and **RIVASTIGMINE**
- ▶ Progestogens: plasma concentration of tizanidine possibly increased by **PROGESTOGENS** (increased risk of toxicity)
- ▶ Sympathomimetics, Beta<sub>2</sub>: effects of suxamethonium enhanced by **BAMBUTEROL**
- ▶ Vasodilator Antihypertensives: enhanced hypotensive effect when baclofen or tizanidine given with **HYDRALAZINE**; enhanced hypotensive effect when baclofen or tizanidine given with **MINOXIDIL**; enhanced hypotensive effect when baclofen or tizanidine given with **SODIUM NITROPRUSSIDE**

**Muscle Relaxants, depolarising** see Muscle Relaxants**Muscle Relaxants, non-depolarising** see Muscle Relaxants  
**Mycophenolate**

- ▶ Antacids: absorption of mycophenolate reduced by **ANTACIDS**
- Antibacterials: bioavailability of mycophenolate possibly reduced by **METRONIDAZOLE** and **NORFLOXACIN**; plasma concentration of mycophenolate possibly reduced by **CO-AMOXICLAV**; plasma concentration of active metabolite of mycophenolate reduced by ● **RIFAMPICIN**
- ▶ Antivirals: mycophenolate increases plasma concentration of **ACICLOVIR** and **VALACICLOVIR**, also plasma concentration of inactive metabolite of mycophenolate increased; mycophenolate possibly increases plasma concentration of



**Mycophenolate**

- Antivirals (continued)
- GANCICLOVIR** and **VALGANCICLOVIR**, also plasma concentration of inactive metabolite of mycophenolate possibly increased
- ▶ **Colestilan**: manufacturer of colestilan advises give mycophenolate at least 1 hour before or 3 hours after **COLESTILAN**
- ▶ **Iron Salts**: absorption of mycophenolate reduced by *oral* **IRON SALTS**
- ▶ **Lipid-regulating Drugs**: absorption of mycophenolate reduced by **COLESTYRAMINE**
- ▶ **Sevelamer**: plasma concentration of mycophenolate possibly reduced by **SEVELAMER**

**Nabumetone** see NSAIDs

**Nadolol** see Beta-blockers

**Nalidixic Acid** see Quinolones

**Nalmefene**

- Analgesics: manufacturer of nalmefene advises avoid concomitant use with ● **OPIOID ANALGESICS**

**Nandrolone** see Anabolic Steroids

**Naproxen** see NSAIDs

**Naratriptan** see 5HT<sub>1</sub>-receptor Agonists (under HT)

**Natalizumab**

- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)
- Vaccines: risk of generalised infections when monoclonal antibodies given with live ● **VACCINES**—avoid concomitant use

**Nateglinide** see Antidiabetics

**Nebivolol** see Beta-blockers

**Nefopam**

- Antidepressants: manufacturer of nefopam advises avoid concomitant use with ● **MAOIS**; side-effects possibly increased when nefopam given with **TRICYCLICS**
- ▶ Antimuscarinics: increased risk of antimuscarinic side-effects when nefopam given with **ANTIMUSCARINICS**

**Neomycin** see Aminoglycosides

**Neostigmine** see Parasympathomimetics

**Nevirapine**

- ▶ Analgesics: nevirapine possibly reduces plasma concentration of **METHADONE**
- Antibacterials: nevirapine reduces plasma concentration of **CLARITHROMYCIN** (but concentration of an active metabolite increased), also plasma concentration of nevirapine increased; nevirapine possibly increases plasma concentration of **RIFABUTIN**; plasma concentration of nevirapine reduced by ● **RIFAMPICIN**—avoid concomitant use
- Anticoagulants: nevirapine may enhance or reduce anticoagulant effect of ● **WARFARIN**
- Antidepressants: plasma concentration of nevirapine reduced by ● **ST JOHN'S WORT**—avoid concomitant use
- ▶ Antiepileptics: plasma concentration of nevirapine reduced by **CARBAMAZEPINE**
- Antifungals: nevirapine reduces plasma concentration of ● **KETOCONAZOLE**—avoid concomitant use; plasma concentration of nevirapine increased by ● **FLUCONAZOLE**; nevirapine possibly reduces plasma concentration of **CASPOFUNGIN** and **ITRACONAZOLE**—consider increasing dose of caspofungin and itraconazole
- Antipsychotics: nevirapine possibly reduces plasma concentration of ● **ARIPRAZOLE** (avoid concomitant use or consider increasing the dose of aripiprazole—consult aripiprazole product literature)
- Antivirals: nevirapine possibly reduces plasma concentration of ● **ATAZANAVIR** and ● **ETRAVIRINE**—avoid concomitant use; manufacturer of nevirapine advises avoid concomitant use with **BOCEPREVIR** and **RILPIVIRINE**; avoidance of nevirapine advised by manufacturer of **DACLATASVIR** (plasma concentration of daclatasvir possibly reduced); nevirapine possibly reduces the plasma concentration of ● **DOLUTEGRAVIR** (see under Dolutegravir, p. 557); nevirapine reduces plasma concentration of ● **EFAVIRENZ**—avoid concomitant use; avoidance of nevirapine advised by manufacturer of **ELVITEGRAVIR**; nevirapine possibly reduces plasma concentration of **FOSAMPRENAVIR**—avoid unboosted fosamprenavir; nevirapine reduces plasma concentration of

**Nevirapine**

- Antivirals (continued)
- INDINAVIR**; nevirapine possibly reduces plasma concentration of ● **LOPINAVIR** and **TELAPREVIR**—consider increasing dose of lopinavir and telaprevir; nevirapine possibly reduces plasma concentration of ● **SIMEPREVIR**—manufacturer of simeprevir advises avoid concomitant use; increased risk of granulocytopenia when nevirapine given with ● **ZIDOVUDINE**
- ▶ Cobistat: manufacturer of nevirapine advises avoid concomitant use with **COBICISTAT**
- Oestrogens: nevirapine accelerates metabolism of ● **OESTROGENS** (reduced contraceptive effect with combined oral contraceptives, contraceptive patches, and vaginal rings—see Contraceptive Interactions in BNF)
- Orlistat: absorption of nevirapine possibly reduced by ● **ORLISTAT**
- Progestogens: nevirapine accelerates metabolism of ● **PROGESTOGENS** (reduced contraceptive effect with combined oral contraceptives, progestogen-only oral contraceptives, contraceptive patches, vaginal rings, etonogestrel-releasing implant, and emergency hormonal contraception—see Contraceptive Interactions in BNF)

**Nicardipine** see Calcium-channel Blockers

**Nicorandil**

- ▶ Alcohol: hypotensive effect of nicorandil possibly enhanced by **ALCOHOL**
- ▶ Antidepressants: enhanced hypotensive effect when nicorandil given with **MAOIS**; hypotensive effect of nicorandil possibly enhanced by **TRICYCLICS**
- Avanafil: hypotensive effect of nicorandil significantly enhanced by ● **AVANAFIL** (avoid concomitant use)
- Sildenafil: hypotensive effect of nicorandil significantly enhanced by ● **SILDENAFIL** (avoid concomitant use)
- Tadalafil: hypotensive effect of nicorandil significantly enhanced by ● **TADALAFIL** (avoid concomitant use)
- Vardenafil: possible increased hypotensive effect when nicorandil given with ● **VARDENAFIL**—avoid concomitant use
- ▶ Vasodilator Antihypertensives: possible enhanced hypotensive effect when nicorandil given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**

**Nicotine**

- ▶ Anti-arrhythmics: nicotine possibly enhances effects of **ADENOSINE**

**Nicotinic Acid**

- Lipid-regulating Drugs: increased risk of myopathy when nicotinic acid given with ● **STATINS** (applies to lipid regulating doses of nicotinic acid)

**Nifedipine** see Calcium-channel Blockers

**Nilotinib**

- Antibacterials: manufacturer of nilotinib advises avoid concomitant use with ● **CLARITHROMYCIN** and ● **TELITHROMYCIN**; plasma concentration of nilotinib reduced by ● **RIFAMPICIN**—avoid concomitant use
- Antifungals: plasma concentration of nilotinib increased by ● **KETOCONAZOLE**—avoid concomitant use; manufacturer of nilotinib advises avoid concomitant use with ● **ITRACONAZOLE** and ● **VORICONAZOLE**
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Antivirals: avoidance of nilotinib advised by manufacturer of ● **BOCEPREVIR**; plasma concentration of nilotinib possibly increased by **RITONAVIR**—manufacturer of nilotinib advises avoid concomitant use
- ▶ Anxiolytics and Hypnotics: nilotinib increases plasma concentration of **MIDAZOLAM**
- Grapefruit Juice: manufacturer of nilotinib advises avoid concomitant use with ● **GRAPEFRUIT JUICE**
- ▶ Lipid-regulating Drugs: separating administration from nilotinib by 12 hours advised by manufacturer of **LOMITAPIDE**

**Nimodipine** see Calcium-channel Blockers

**Nintedanib**

- Antibacterials: plasma concentration of nintedanib reduced by ● **RIFAMPICIN**—avoid concomitant use
- Antifungals: plasma concentration of nintedanib increased by ● **KETOCONAZOLE**

**Nitrates**

- ACE Inhibitors: enhanced hypotensive effect when nitrates given with **ACE INHIBITORS**
- Adrenergic Neurone Blockers: enhanced hypotensive effect when nitrates given with **ADRENERGIC NEURONE BLOCKERS**
- Alcohol: enhanced hypotensive effect when nitrates given with **ALCOHOL**
- Aldesleukin: enhanced hypotensive effect when nitrates given with **ALDESLEUKIN**
- Alpha-blockers: enhanced hypotensive effect when nitrates given with **ALPHA-BLOCKERS**
- Anaesthetics, General: enhanced hypotensive effect when nitrates given with **GENERAL ANAESTHETICS**
- Analgesics: hypotensive effect of nitrates antagonised by **NSAIDS**
- Angiotensin-II Receptor Antagonists: enhanced hypotensive effect when nitrates given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- Anti-arrhythmics: effects of sublingual tablets of nitrates reduced by **DISOPYRAMIDE** (failure to dissolve under tongue owing to dry mouth)
- Anticoagulants: *infusion* of glyceryl trinitrate reduces anticoagulant effect of ● **HEPARIN**
- Antidepressants: enhanced hypotensive effect when nitrates given with **MAOIs**; effects of sublingual tablets of nitrates possibly reduced by **TRICYCLIC-RELATED ANTIDEPRESSANTS** (failure to dissolve under tongue owing to dry mouth); effects of sublingual tablets of nitrates reduced by **TRICYCLICS** (failure to dissolve under tongue owing to dry mouth)
- Antimuscarinics: effects of sublingual tablets of nitrates possibly reduced by **ANTIMUSCARINICS** (failure to dissolve under tongue owing to dry mouth)
- Antipsychotics: enhanced hypotensive effect when nitrates given with **PHENOTHIAZINES**
- Anxiolytics and Hypnotics: enhanced hypotensive effect when nitrates given with **ANXIOLYTICS AND HYPNOTICS**
- Avanafil: hypotensive effect of nitrates significantly enhanced by ● **AVANAFIL** (avoid concomitant use)
- Beta-blockers: enhanced hypotensive effect when nitrates given with **BETA-BLOCKERS**
- Calcium-channel Blockers: enhanced hypotensive effect when nitrates given with **CALCIUM-CHANNEL BLOCKERS**
- Clonidine: enhanced hypotensive effect when nitrates given with **CLONIDINE**
- Corticosteroids: hypotensive effect of nitrates antagonised by **CORTICOSTEROIDS**
- Diazoxide: enhanced hypotensive effect when nitrates given with **DIAZOXIDE**
- Diuretics: enhanced hypotensive effect when nitrates given with **DIURETICS**
- Dopaminergics: enhanced hypotensive effect when nitrates given with **CO-BENELDOPA**, **CO-CARELDOPA** or **LEVODOPA**
- Methyldopa: enhanced hypotensive effect when nitrates given with **METHYLDOPA**
- Moxisylyte: enhanced hypotensive effect when nitrates given with **MOXISYLYTE**
- Moxonidine: enhanced hypotensive effect when nitrates given with **MOXONIDINE**
- Muscle Relaxants: enhanced hypotensive effect when nitrates given with **BACLOFEN** or **TIZANIDINE**
- Oestrogens: hypotensive effect of nitrates antagonised by **OESTROGENS**
- Prostaglandins: enhanced hypotensive effect when nitrates given with **ALPROSTADIL**
- Riociguat: possible enhanced hypotensive effect when nitrates given with ● **RIOCIGUAT**—avoid concomitant use
- Sildenafil: hypotensive effect of nitrates significantly enhanced by ● **SILDENAFIL** (avoid concomitant use)
- Tadalafil: hypotensive effect of nitrates significantly enhanced by ● **TADALAFIL** (avoid concomitant use)
- Vardenafil: possible increased hypotensive effect when nitrates given with ● **VARDENAFIL**—avoid concomitant use
- Vasodilator Antihypertensives: enhanced hypotensive effect when nitrates given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**

**Nitrazepam** see Anxiolytics and Hypnotics

**Nitrofurantoin**

- Antacids: absorption of nitrofurantoin reduced by **ORAL MAGNESIUM SALTS** (as magnesium trisilicate)
  - Antibacterials: nitrofurantoin possibly antagonises effects of **NALIDIXIC ACID**
  - Sulfinpyrazone: excretion of nitrofurantoin reduced by **SULFINPYRAZONE** (increased risk of toxicity)
  - Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF
- Nitroimidazoles** see Metronidazole and Tinidazole
- Nitrous Oxide** see Anaesthetics, General
- Nizatidine** see Histamine H<sub>2</sub>-antagonists
- Nomegestrol** see Progestogens
- Noradrenaline (norepinephrine)** see Sympathomimetics
- Norelgestromin** see Progestogens

**Norepinephrine**

**NOTE** Norepinephrine interactions as for noradrenaline, see under sympathomimetics

**Norethisterone** see Progestogens

**Norfloracin** see Quinolones

**Norgestimate** see Progestogens

**Norgestrel** see Progestogens

**Normal Immunoglobulin** see Immunoglobulins

**Nortriptyline** see Antidepressants, Tricyclic

**NSAIDs**

**NOTE** See also Aspirin. Interactions do not generally apply to topical NSAIDs

- ACE Inhibitors: increased risk of renal impairment when NSAIDs given with **ACE INHIBITORS**, also hypotensive effect antagonised
- Adrenergic Neurone Blockers: NSAIDs antagonise hypotensive effect of **ADRENERGIC NEURONE BLOCKERS**
- Aliskiren: NSAIDs possibly antagonise hypotensive effect of **ALISKIREN**
- Alpha-blockers: NSAIDs antagonise hypotensive effect of **ALPHA-BLOCKERS**
- Analgesics: avoid concomitant use of NSAIDs with ● **NSAIDs** or ● **ASPIRIN** (increased side-effects); avoid concomitant use of NSAIDs with ● **KETOROLAC** (increased side-effects and haemorrhage); ibuprofen possibly reduces antiplatelet effect of **ASPIRIN**
- Angiotensin-II Receptor Antagonists: increased risk of renal impairment when NSAIDs given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**, also hypotensive effect antagonised
- Antacids: absorption of acetaminophen possibly reduced by **ANTACIDS**
- Antibacterials: indometacin possibly increases plasma concentration of **AMIKACIN** and **GENTAMICIN** in neonates; plasma concentration of celecoxib, diclofenac and etoricoxib reduced by **RIFAMPICIN**; possible increased risk of convulsions when NSAIDs given with ● **QUINOLONES**
- Anticoagulants: increased risk of haemorrhage when *intravenous* diclofenac given with ● **ANTICOAGULANTS** (avoid concomitant use, including low-dose heparins); increased risk of haemorrhage when ketorolac given with ● **ANTICOAGULANTS** (avoid concomitant use, including low-dose heparins); NSAIDs possibly enhance anticoagulant effect of ● **COUMARINS** and ● **PHENINDIONE**; possible increased risk of bleeding when NSAIDs given with ● **DABIGATRAN** or **HEPARINS**
- Antidepressants: increased risk of bleeding when NSAIDs given with ● **SSRIS** or ● **VENLAFAXINE**
- Antidiabetics: NSAIDs possibly enhance effects of ● **SULFONYLUREAS**
- Antiepileptics: acetaminophen possibly reduces excretion of **FOSPHENYTOIN** and **PHENYTOIN** (increased risk of toxicity)
- Antifungals: plasma concentration of parecoxib increased by **FLUCONAZOLE** (reduce dose of parecoxib); plasma concentration of celecoxib increased by **FLUCONAZOLE** (halve dose of celecoxib); plasma concentration of flurbiprofen and ibuprofen increased by **FLUCONAZOLE**; plasma concentration of diclofenac and ibuprofen increased by **VORICONAZOLE**
- Antipsychotics: possible severe drowsiness when acetaminophen and indometacin given with **HALOPERIDOL**

**NSAIDs** (continued)

- Antivirals: plasma concentration of piroxicam increased by
  - **RITONAVIR** (risk of toxicity)—avoid concomitant use; plasma concentration of NSAIDs possibly increased by **RITONAVIR**; increased risk of haematological toxicity when NSAIDs given with **ZIDOVUDINE**
- Beta-blockers: NSAIDs antagonise hypotensive effect of **BETA-BLOCKERS**
- Calcium-channel Blockers: NSAIDs antagonise hypotensive effect of **CALCIUM-CHANNEL BLOCKERS**
- Cardiac Glycosides: NSAIDs possibly increase plasma concentration of **CARDIAC GLYCOSIDES**, also possible exacerbation of heart failure and reduction of renal function
- Ciclosporin: increased risk of nephrotoxicity when NSAIDs given with ● **CICLOSPORIN**; plasma concentration of diclofenac increased by ● **CICLOSPORIN** (halve dose of diclofenac)
- Clonidine: NSAIDs antagonise hypotensive effect of **CLONIDINE**
- Clopidogrel: increased risk of bleeding when NSAIDs given with **CLOPIDOGREL**
- Corticosteroids: increased risk of gastro-intestinal bleeding and ulceration when NSAIDs given with **CORTICOSTEROIDS**
- Cytotoxics: NSAIDs probably reduce excretion of
  - **METHOTREXATE** (increased risk of toxicity); diclofenac, ibuprofen, indometacin, ketoprofen, meloxicam and naproxen reduce excretion of ● **METHOTREXATE** (increased risk of toxicity); NSAIDs possibly reduce renal excretion of **PEMETREXED**—consult product literature; increased risk of bleeding when NSAIDs given with ● **ERLOTINIB**; avoidance of mefenamic acid advised by manufacturer of **REGORAFENIB**
- Desmopressin: indometacin enhances effects of **DESMOPRESSIN**
- Diazoxide: NSAIDs antagonise hypotensive effect of **DIAZOXIDE**
- Dimethyl sulfoxide: avoid concomitant use of sulindac with ● **DIMETHYL SULFOXIDE**
- Diuretics: risk of nephrotoxicity of NSAIDs increased by **DIURETICS**, also antagonism of diuretic effect; indometacin and ketorolac antagonise effects of **DIURETICS**; excretion of acetaminol possibly increased by **FUROSEMIDE**; NSAIDs possibly antagonise diuretic effect of **POTASSIUM CANRENOATE**; occasional reports of reduced renal function when indometacin given with ● **TRIAMTERENE**—avoid concomitant use; possible increased risk of hyperkalaemia when NSAIDs given with **POTASSIUM-SPARING DIURETICS AND ALDOSTERONE ANTAGONISTS**; increased risk of hyperkalaemia when indometacin given with **POTASSIUM-SPARING DIURETICS AND ALDOSTERONE ANTAGONISTS**
- Iloprost: increased risk of bleeding when NSAIDs given with **ILOPROST**
- Lipid-regulating Drugs: excretion of meloxicam increased by **COLESTYRAMINE**
- Lithium: NSAIDs reduce excretion of ● **LITHIUM** (increased risk of toxicity); ketorolac reduces excretion of ● **LITHIUM** (increased risk of toxicity)—avoid concomitant use
- Methyldopa: NSAIDs antagonise hypotensive effect of **METHYLDOPA**
- Mifamurtide: avoidance of high doses of NSAIDs advised by manufacturer of **MIFAMURTIDE**
- Moxonidine: NSAIDs antagonise hypotensive effect of **MOXONIDINE**
- Muscle Relaxants: ibuprofen reduces excretion of **BACLOFEN** (increased risk of toxicity); NSAIDs possibly reduce excretion of **BACLOFEN** (increased risk of toxicity)
- Nitrates: NSAIDs antagonise hypotensive effect of **NITRATES**
- Oestrogens: etoricoxib increases plasma concentration of **ETHINYLESTRADIOL**
- Penicillamine: possible increased risk of nephrotoxicity when NSAIDs given with **PENICILLAMINE**
- Pentoxifylline: possible increased risk of bleeding when NSAIDs given with **PENTOXIFYLLINE**; increased risk of bleeding when ketorolac given with ● **PENTOXIFYLLINE** (avoid concomitant use)
- Prasugrel: possible increased risk of bleeding when NSAIDs given with **PRASUGREL**
- Tacrolimus: possible increased risk of nephrotoxicity when NSAIDs given with **TACROLIMUS**; increased risk of nephrotoxicity when ibuprofen given with ● **TACROLIMUS**

**NSAIDs** (continued)

- Vasodilator Antihypertensives: NSAIDs antagonise hypotensive effect of **HYDRALAZINE**, **MINOXIDIL** and **SODIUM NITROPRUSSIDE**
- Obinutuzumab**
- Antipsychotics: avoid concomitant use of cytotoxics with
    - **CLOZAPINE** (increased risk of agranulocytosis)
  - Vaccines: risk of generalised infections when monoclonal antibodies given with live ● **VACCINES**—avoid concomitant use
- Ocreotide**
- Antidiabetics: ocreotide possibly reduces requirements for **ANTIIDIABETICS**
  - Ciclosporin: ocreotide reduces plasma concentration of ● **CICLOSPORIN**
  - Dopaminergics: ocreotide increases plasma concentration of **BROMOCRIPTINE**
  - Ulcer-healing Drugs: ocreotide possibly delays absorption of **CIMETIDINE**
- Oestrogens**
- ACE Inhibitors: oestrogens antagonise hypotensive effect of **ACE INHIBITORS**
  - Adrenergic Neurone Blockers: oestrogens antagonise hypotensive effect of **ADRENERGIC NEURONE BLOCKERS**
  - Alpha-blockers: oestrogens antagonise hypotensive effect of **ALPHA-BLOCKERS**
  - Aminophylline: oestrogens increase plasma concentration of **AMINOPHYLLINE** (consider reducing dose of aminophylline)
  - Analgesics: plasma concentration of ethinylestradiol increased by **ETORICOXIB**
  - Angiotensin-II Receptor Antagonists: oestrogens antagonise hypotensive effect of **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
  - Antibacterials: plasma concentration of estradiol increased by **ERYTHROMYCIN**; metabolism of oestrogens accelerated by ● **RIFAMYCINS** (reduced contraceptive effect with combined oral contraceptives, contraceptive patches, and vaginal rings—see Contraceptive Interactions in BNF)
  - Anticoagulants: oestrogens may enhance or reduce anticoagulant effect of **COUMARINS**; oestrogens antagonise anticoagulant effect of ● **PHENINDIONE**
  - Antidepressants: contraceptive effect of oestrogens reduced by
    - **ST JOHN'S WORT** (avoid concomitant use); oestrogens antagonise antidepressant effect of **TRICYCLICS** (but side-effects of tricyclics possibly increased due to increased plasma concentration)
  - Antidiabetics: oestrogens antagonise hypoglycaemic effect of **ANTIIDIABETICS**
  - Antiepileptics: metabolism of oestrogens accelerated by
    - **CARBAMAZEPINE**, ● **ESLICARBAPZEPINE**, ● **FOSPHENYTOIN**, ● **OXCARBAZEPINE**, ● **PHENOBARBITAL**, ● **PHENYTOIN**, ● **PRIMIDONE**, ● **RUFINAMIDE** and ● **TOPIRAMATE** (reduced contraceptive effect with combined oral contraceptives, contraceptive patches, and vaginal rings—see Contraceptive Interactions in BNF); oestrogens reduce plasma concentration of ● **LAMOTRIGINE**—consider increasing dose of lamotrigine; ethinylestradiol possibly reduces plasma concentration of **SODIUM VALPROATE** and **VALPROIC ACID**
  - Antifungals: oestrogens increase plasma concentration of **VORICONAZOLE**; anecdotal reports of contraceptive failure and menstrual irregularities when oestrogens given with **GRISEOFULVIN**; anecdotal reports of contraceptive failure when oestrogens given with **IMIDAZOLES**; occasional reports of breakthrough bleeding when oestrogens (used for contraception) given with **TERBINAFINE**
  - Antivirals: plasma concentration of ethinylestradiol increased by **ATAZANAVIR**; metabolism of oestrogens accelerated by
    - **NEVIRAPINE** and ● **RITONAVIR** (reduced contraceptive effect with combined oral contraceptives, contraceptive patches, and vaginal rings—see Contraceptive Interactions in BNF); plasma concentration of ethinylestradiol possibly reduced by ● **TELAPREVIR**—manufacturer of telaprevir advises additional contraceptive precautions
  - Anxiolytics and Hypnotics: oestrogens possibly increase plasma concentration of **CHLORDIAZEPOXIDE**, **DIAZEPAM** and **NITRAZEPAM**; oestrogens possibly reduce plasma concentration of **LORAZEPAM**, **OXAZEPAM** and **TEMAZEPAM**; oestrogens increase plasma concentration of **MELATONIN**

**Oestrogens** (continued)

- Aprepitant: possible contraceptive failure of hormonal contraceptives containing oestrogens when given with
  - **APREPITANT** (alternative contraception recommended)
- ▶ Beta-blockers: oestrogens antagonise hypotensive effect of **BETA-BLOCKERS**
- Bosentan: possible contraceptive failure of hormonal contraceptives containing oestrogens when given with
  - **BOSENTAN** (alternative contraception recommended)
- ▶ Calcium-channel Blockers: oestrogens antagonise hypotensive effect of **CALCIUM-CHANNEL BLOCKERS**
- ▶ Ciclosporin: oestrogens possibly increase plasma concentration of **CICLOSPORIN**
- ▶ Clonidine: oestrogens antagonise hypotensive effect of **CLONIDINE**
- Cobicistat: metabolism of oestrogens accelerated by
  - **COBICISTAT** (reduced contraceptive effect with combined oral contraceptives, contraceptive patches, and vaginal rings—see Contraceptive Interactions in BNF)
- ▶ Corticosteroids: oral contraceptives containing oestrogens increase plasma concentration of **CORTICOSTEROIDS**
- Cytotoxics: possible reduction in contraceptive effect of oestrogens advised by manufacturer of
  - **CRIZOTINIB** and
  - **VEMURAFENIB**; possible reduced contraceptive effect of hormonal contraceptives containing oestrogens advised by manufacturer of • **DABRAFENIB** (alternative contraception recommended)
- ▶ Diuretics: oestrogens antagonise diuretic effect of **DIURETICS**
- Dopaminergics: oestrogens increase plasma concentration of **ROPINIROLE**; oestrogens increase plasma concentration of
  - **SELEGILINE**—manufacturer of selegiline advises avoid concomitant use
- Fosaprepitant: possible contraceptive failure of hormonal contraceptives containing oestrogens when given with
  - **FOSAPREPITANT** (alternative contraception recommended)
- ▶ Lipid-regulating Drugs: absorption of ethinylestradiol reduced by **COLESEVELAM**; plasma concentration of ethinylestradiol increased by **ATORVASTATIN** and **ROSUVASTATIN**; separating administration from oestrogens by 12 hours advised by manufacturer of **LOMITAPIDE**
- ▶ Methyldopa: oestrogens antagonise hypotensive effect of **METHYLDOPA**
- Modafinil: metabolism of oestrogens accelerated by
  - **MODAFINIL** (reduced contraceptive effect with combined oral contraceptives, contraceptive patches, and vaginal rings—see Contraceptive Interactions in BNF)
- ▶ Moxonidine: oestrogens antagonise hypotensive effect of **MOXONIDINE**
- ▶ Muscle Relaxants: oestrogens possibly increase plasma concentration of **TIZANIDINE** (increased risk of toxicity)
- ▶ Nitrates: oestrogens antagonise hypotensive effect of **NITRATES**
- ▶ Somatropin: oestrogens (when used as oral replacement therapy) may increase dose requirements of **SOMATROPIN**
- ▶ Tacrolimus: ethinylestradiol possibly increases plasma concentration of **TACROLIMUS**
- ▶ Teriflunomide: plasma concentration of ethinylestradiol increased by **TERIFLUNOMIDE**
- ▶ Theophylline: oestrogens increase plasma concentration of **THEOPHYLLINE** (consider reducing dose of theophylline)
- ▶ Thyroid Hormones: oestrogens may increase requirements for **THYROID HORMONES** in hypothyroidism
- ▶ Vasodilator Antihypertensives: oestrogens antagonise hypotensive effect of **HYDRALAZINE**, **MINOXIDIL** and **SODIUM NITROPRUSSIDE**

**Oestrogens, conjugated** see Oestrogens**Ofatumumab**

- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)
- Vaccines: risk of generalised infections when monoclonal antibodies given with live • **VACCINES**—avoid concomitant use

**Ofloxacin** see Quinolones**Olanzapine** see Antipsychotics**Olmestartan** see Angiotensin-II Receptor Antagonists**Olodaterol** see Sympathomimetics, Beta<sub>2</sub>**Omeprazole** see Proton Pump Inhibitors**Ondansetron** see 5HT<sub>3</sub>-receptor Antagonists (under HT)**Opioid Analgesics**

- ▶ Alcohol: enhanced hypotensive and sedative effects when opioid analgesics given with **ALCOHOL**
- ▶ Anaesthetics, General: fentanyl inhibits metabolism of **ETOMIDATE** (consider reducing dose of etomidate); opioid analgesics possibly enhance effects of **INTRAVENOUS GENERAL ANAESTHETICS** and **VOLATILE LIQUID GENERAL ANAESTHETICS**
- ▶ Analgesics: avoidance of buprenorphine advised by manufacturer of **FENTANYL**; manufacturer of fentanyl advises avoid concomitant use with **PENTAZOCINE**
- Antibacterials: plasma concentration of fentanyl possibly increased by **CLARITHROMYCIN**; plasma concentration of alfentanil increased by **ERYTHROMYCIN**; metabolism of alfentanil, codeine, fentanyl, methadone and morphine accelerated by **RIFAMPICIN** (reduced effect); metabolism of oxycodone possibly accelerated by **RIFAMPICIN**; increased risk of ventricular arrhythmias when methadone given with
  - **DELAMANID**; manufacturer of pethidine advises avoid concomitant use with **ISONIAZID**; metabolism of oxycodone inhibited by **TELITHROMYCIN**; possible increased risk of ventricular arrhythmias when methadone given with
  - **TELITHROMYCIN**
- Anticoagulants: tramadol enhances anticoagulant effect of
  - **COUMARINS**
- Antidepressants: plasma concentration of methadone possibly increased by **FLUOXETINE**, **FLUVOXAMINE**, **PAROXETINE** and **SERTRALINE**; possible increased serotonergic effects when pethidine or tramadol given with **DULOXETINE**; possible increased serotonergic effects when tramadol given with **MIRTAZAPINE** or **VENLAFAXINE**; possible CNS excitation or depression (hypertension or hypotension) when opioid analgesics given with • **MAOIS**—some manufacturers advise avoid concomitant use and for 2 weeks after stopping MAOIs; possible increased serotonergic effects and increased risk of convulsions when tramadol given with • **MAOIS**—some manufacturers advise avoid concomitant use and for 2 weeks after stopping MAOIs; CNS excitation or depression (hypertension or hypotension) when pethidine given with • **MAOIS**—avoid concomitant use and for 2 weeks after stopping MAOIs; possible increased serotonergic effects when fentanyl given with **MAOIS**, **SSRI-RELATED ANTIDEPRESSANTS** or **SSRIS**; possible CNS excitation or depression (hypertension or hypotension) when opioid analgesics given with • **MOCLOBEMIDE**—manufacturer of moclobemide advises consider reducing dose of opioid analgesics; possible CNS excitation or depression (hypertension or hypotension) when dextromethorphan or pethidine given with • **MOCLOBEMIDE**—avoid concomitant use; increased risk of CNS toxicity when tramadol given with • **SSRIS** or • **TRICYCLICS**; plasma concentration of methadone possibly reduced by **ST JOHN'S WORT**; sedative effects possibly increased when opioid analgesics given with **TRICYCLICS**
- Antiepileptics: effects of tramadol reduced by **CARBAMAZEPINE**; plasma concentration of methadone reduced by **CARBAMAZEPINE**, **PHENOBARBITAL** and **PRIMIDONE**; metabolism of fentanyl possibly accelerated by **CARBAMAZEPINE**, **FOSPHENYTOIN** and **PHENYTOIN** (reduced effect); dextropropoxyphene enhances effects of • **CARBAMAZEPINE**; metabolism of methadone accelerated by **FOSPHENYTOIN** and **PHENYTOIN** (reduced effect and risk of withdrawal effects); possible increased risk of pethidine toxicity when given with • **FOSPHENYTOIN** and • **PHENYTOIN**; morphine increases bioavailability of **GABAPENTIN**
- Antifungals: metabolism of buprenorphine inhibited by
  - **KETOCONAZOLE** (reduce dose of buprenorphine); possible increased risk of ventricular arrhythmias when methadone given with • **KETOCONAZOLE**—manufacturer of ketoconazole advises avoid concomitant use; plasma concentration of oxycodone increased by **ITRACONAZOLE**, **KETOCONAZOLE** and • **VORICONAZOLE**; metabolism of alfentanil inhibited by **FLUCONAZOLE** (risk of prolonged or delayed respiratory depression); plasma concentration of methadone increased by **FLUCONAZOLE**; metabolism of alfentanil possibly inhibited by **ITRACONAZOLE**; plasma concentration of methadone



## Opioid Analgesics

- Antifungals (continued)
  - possibly increased by • **ITRACONAZOLE** (increased risk of ventricular arrhythmias); plasma concentration of alfentanil and methadone increased by • **VORICONAZOLE** (consider reducing dose of alfentanil and methadone); plasma concentration of fentanyl possibly increased by • **TRIAZOLES**
- Antihistamines: sedative effects possibly increased when opioid analgesics given with • **SEDATING ANTIHISTAMINES**
- Antimalarials: avoidance of methadone advised by manufacturer of • **ARTENIMOL WITH PIPERAQUINE** (possible risk of ventricular arrhythmias)
- Antimuscarinics: possible increased risk of antimuscarinic side-effects when codeine given with **ANTIMUSCARINICS**
- Antipsychotics: enhanced hypotensive and sedative effects when opioid analgesics given with **ANTIPSYCHOTICS**; increased risk of ventricular arrhythmias when methadone given with • **ANTIPSYCHOTICS** that prolong the QT interval; increased risk of convulsions when tramadol given with **ANTIPSYCHOTICS**; increased risk of ventricular arrhythmias when methadone given with • **AMISULPRIDE**—avoid concomitant use
- Antivirals: plasma concentration of methadone possibly reduced by **ABACAVIR**, **NEVIRAPINE** and **RILPIVIRINE**; plasma concentration of methadone possibly affected by **BOCEPREVIR**; possible increased risk of prolonged sedation and respiratory depression when buprenorphine given with **BOCEPREVIR**; methadone possibly reduces plasma concentration of **DIDANOSINE**; plasma concentration of methadone reduced by **EFAVIRENZ**, **FOSAMPRENNAVIR** and **RITONAVIR**; plasma concentration of buprenorphine possibly increased by **RITONAVIR**; plasma concentration of alfentanil and fentanyl increased by • **RITONAVIR**; plasma concentration of pethidine reduced by • **RITONAVIR**, but plasma concentration of toxic pethidine metabolite increased (avoid concomitant use); plasma concentration of morphine possibly reduced by **RITONAVIR**; plasma concentration of dextropropoxyphene increased by • **RITONAVIR** (risk of toxicity)—avoid concomitant use; increased risk of ventricular arrhythmias when alfentanil, fentanyl or methadone given with • **SAQUINAVIR**—avoid concomitant use; caution with methadone advised by manufacturer of • **TELAPREVIR** (risk of ventricular arrhythmias); buprenorphine possibly reduces plasma concentration of **TIPRANAVIR**; methadone possibly increases plasma concentration of **ZIDOVUDINE**
- Anxiolytics and Hypnotics: increased sedative effect when opioid analgesics given with **ANXIOLYTICS AND HYPNOTICS**; fentanyl possibly inhibits metabolism of **MIDAZOLAM**
- Atomoxetine: increased risk of ventricular arrhythmias when methadone given with • **ATOMOXETINE**; possible increased risk of convulsions when tramadol given with **ATOMOXETINE**
- Beta-blockers: morphine possibly increases plasma concentration of **ESMOLOL**
- Calcium-channel Blockers: metabolism of alfentanil inhibited by **DILTIAZEM** (risk of prolonged or delayed respiratory depression)
- Cytotoxics: possible increased risk of ventricular arrhythmias when methadone given with • **BOSUTINIB**; caution with alfentanil and fentanyl advised by manufacturer of • **CRIZOTINIB**; possible increased risk of ventricular arrhythmias when methadone given with • **VANDETANIB**—avoid concomitant use
- Dapoxetine: possible increased risk of serotonergic effects when tramadol given with • **DAPOXETINE** (manufacturer of dapoxetine advises tramadol should not be started until 1 week after stopping dapoxetine, avoid dapoxetine for 2 weeks after stopping tramadol)
- Domperidone: opioid analgesics antagonise effects of **DOMPERIDONE** on gastro-intestinal activity
- Dopaminergics: avoid concomitant use of dextromethorphan with • **RASAGILINE**; risk of CNS toxicity when pethidine given with • **RASAGILINE** (avoid pethidine for 2 weeks after rasagiline); avoidance of opioid analgesics advised by manufacturer of **SELEGILINE**; hyperpyrexia and CNS toxicity reported when pethidine given with • **SELEGILINE** (avoid concomitant use)

## Opioid Analgesics (continued)

- Hormone Antagonists: plasma concentration of dextromethorphan increased by **ABIRATERONE**
- 5HT<sub>2</sub>-receptor Antagonists: effects of tramadol possibly antagonised by **ONDANSETRON**
- Memantine: increased risk of CNS toxicity when dextromethorphan given with • **MEMANTINE** (manufacturer of memantine advises avoid concomitant use)
- Metoclopramide: opioid analgesics antagonise effects of **METOCLOPRAMIDE** on gastro-intestinal activity
- Muscle Relaxants: increased sedative effect when fentanyl or morphine given with **BACLOFEN**
- Nalmefene: avoidance of opioid analgesics advised by manufacturer of • **NALMEFENE**
- Sodium Oxybate: opioid analgesics enhance effects of • **SODIUM OXYBATE** (avoid concomitant use)
- Ulcer-healing Drugs: metabolism of opioid analgesics inhibited by **CIMETIDINE** (increased plasma concentration)

## Oritavancin

- Anticoagulants: oritavancin possibly increases plasma concentration of **WARFARIN**
- Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

## Orlistat

- Anti-arrhythmics: orlistat possibly reduces plasma concentration of **AMIODARONE**
- Anticoagulants: manufacturer of orlistat recommends monitoring anticoagulant effect of **COUMARINS**
- Antidiabetics: manufacturer of orlistat advises avoid concomitant use with **ACARBOSE**
- Antiepileptics: possible increased risk of convulsions when orlistat given with • **ANTIEPILEPTICS**
- Antivirals: orlistat possibly reduces absorption of • **ABACAVIR**, • **ATAZANAVIR**, • **DARUNAVIR**, • **DIDANOSINE**, • **EFAVIRENZ**, • **ELVITEGRAVIR**, • **EMTRICITABINE**, • **ENFUVIRTIDE**, • **ETRAVIRINE**, • **FOSAMPRENNAVIR**, • **INDINAVIR**, • **LAMIVUDINE**, • **LOPINAVIR**, • **MARAVIROC**, • **NEVIRAPINE**, • **RALTEGRAVIR**, • **RILPIVIRINE**, • **RITONAVIR**, • **SAQUINAVIR**, • **STAVUDINE**, • **TENOFOVIR**, • **TIPRANAVIR** and • **ZIDOVUDINE**
- Ciclosporin: orlistat possibly reduces absorption of • **CICLOSPORIN**
- Thyroid Hormones: possible increased risk of hypothyroidism when orlistat given with **LEVOTHYROXINE**

## Orphenadrine

see Antimuscarinics

## Oxaliplatin

see Platinum Compounds

## Oxandrolone

see Anabolic Steroids

## Oxazepam

see Anxiolytics and Hypnotics

## Oxcarbazepine

- Antidepressants: anticonvulsant effect of antiepileptics possibly antagonised by **MAOIS** and • **TRICYCLIC-RELATED ANTIDEPRESSANTS** (convulsive threshold lowered); anticonvulsant effect of antiepileptics antagonised by • **SSRIS** and • **TRICYCLICS** (convulsive threshold lowered)
- Antiepileptics: oxcarbazepine sometimes reduces plasma concentration of **CARBAMAZEPINE** (but concentration of an active metabolite of carbamazepine may be increased), also plasma concentration of an active metabolite of oxcarbazepine often reduced; avoidance of oxcarbazepine advised by manufacturer of **ESLICARBAMAZEPINE**; oxcarbazepine increases plasma concentration of **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**, also plasma concentration of an active metabolite of oxcarbazepine reduced; oxcarbazepine reduces plasma concentration of • **PERAMPANEL** (see under Perampanel, p. 398); plasma concentration of an active metabolite of oxcarbazepine sometimes reduced by **SODIUM VALPROATE** and **VALPROIC ACID**
- Antimalarials: anticonvulsant effect of antiepileptics antagonised by • **MEFLOQUINE**
- Antipsychotics: anticonvulsant effect of antiepileptics antagonised by • **ANTIPSYCHOTICS** (convulsive threshold lowered)
- Antivirals: oxcarbazepine possibly reduces plasma concentration of • **DACLATASVIR** and • **SIMEPREVIR**—manufacturer of daclatasvir and simeprevir advises avoid concomitant use; avoidance of oxcarbazepine advised by

**Oxcarbazepine**

- Antivirals (continued)
  - manufacturer of **DOLUTEGRAVIR** and **SOFOSBUVIR**; avoidance of oxcarbazepine advised by manufacturer of • **RILPIVIRINE** (plasma concentration of rilpivirine possibly reduced)
- ▶ Ciclosporin: oxcarbazepine possibly reduces plasma concentration of **CICLOSPORIN**
- Clopidogrel: oxcarbazepine possibly reduces antiplatelet effect of • **CLOPIDOGREL**
- Cytotoxics: oxcarbazepine reduces plasma concentration of • **IMATINIB**—avoid concomitant use
- Oestrogens: oxcarbazepine accelerates metabolism of • **OESTROGENS** (reduced contraceptive effect with combined oral contraceptives, contraceptive patches, and vaginal rings—see Contraceptive Interactions in BNF)
- Orlistat: possible increased risk of convulsions when antiepileptics given with • **ORLISTAT**
- Progestogens: oxcarbazepine accelerates metabolism of • **PROGESTOGENS** (reduced contraceptive effect with combined oral contraceptives, progestogen-only oral contraceptives, contraceptive patches, vaginal rings, etonogestrel-releasing implant, and emergency hormonal contraception—see Contraceptive Interactions in BNF)

**Oxprenolol** see Beta-blockers

**Oxybutynin** see Antimuscarinics

**Oxycodone** see Opioid Analgesics

**Oxymetazoline** see Sympathomimetics

**Oxytetracycline** see Tetracyclines

**Oxytocin**

- ▶ Anaesthetics, General: oxytocic effect possibly reduced, also enhanced hypotensive effect and risk of arrhythmias when oxytocin given with **VOLATILE LIQUID GENERAL ANAESTHETICS**
- ▶ Prostaglandins: uterotonic effect of oxytocin potentiated by **PROSTAGLANDINS**
- ▶ Sympathomimetics: risk of hypertension when oxytocin given with vasoconstrictor **SYMPATHOMIMETICS** (due to enhanced vasopressor effect)

**Paclitaxel**

- Antipsychotics: avoid concomitant use of cytotoxics with • **CLOZAPINE** (increased risk of agranulocytosis)
- ▶ Antivirals: plasma concentration of paclitaxel increased by **RITONAVIR**
- Cytotoxics: increased risk of neutropenia when paclitaxel given with • **LAPATINIB**

**Paliperidone** see Antipsychotics

**Pamidronate Disodium** see Bisphosphonates

**Pancreatin**

- ▶ Antidiabetics: pancreatin antagonises hypoglycaemic effect of **ACARBOSE**

**Pancuronium** see Muscle Relaxants

**Panitumumab**

- Antipsychotics: avoid concomitant use of cytotoxics with • **CLOZAPINE** (increased risk of agranulocytosis)
- Vaccines: risk of generalised infections when monoclonal antibodies given with live • **VACCINES**—avoid concomitant use

**Pantoprazole** see Proton Pump Inhibitors

**Papaveretum** see Opioid Analgesics

**Paracetamol**

- ▶ Anticoagulants: prolonged regular use of paracetamol possibly enhances anticoagulant effect of **COUMARINS**
- ▶ Antidiabetics: absorption of paracetamol possibly reduced when given 1 to 4 hours after **LIXESINATIDE**
- ▶ Antiepileptics: metabolism of paracetamol possibly accelerated by **CARBAMAZEPINE**, **FOSPHENTYTOIN**, **PHENOBARBITAL**, **PHENTYTOIN** and **PRIMIDONE** (also isolated reports of hepatotoxicity)
- ▶ Antifungals: avoidance of paracetamol advised by manufacturer of **KETOCONAZOLE**
- ▶ Cytotoxics: paracetamol possibly inhibits metabolism of **INTRAVENOUS BUSULFAN** (manufacturer of **INTRAVENOUS busulfan** advises caution within 72 hours of paracetamol); caution with paracetamol advised by manufacturer of **IMATINIB**
- ▶ Lipid-regulating Drugs: absorption of paracetamol reduced by **COLESTYRAMINE**
- ▶ Metoclopramide: rate of absorption of paracetamol increased by **METOCLOPRAMIDE**

**Paraldehyde**

- Alcohol: increased sedative effect when paraldehyde given with • **ALCOHOL**
- Disulfiram: risk of toxicity when paraldehyde given with • **DISULFIRAM**

**Parasympathomimetics**

- ▶ Anti-arrhythmics: effects of neostigmine and pyridostigmine possibly antagonised by **PROPAFENONE**
- Antibacterials: plasma concentration of galantamine increased by **ERYTHROMYCIN**; effects of neostigmine and pyridostigmine antagonised by • **AMINOGLYCOSIDES**; effects of neostigmine and pyridostigmine antagonised by **CLINDAMYCIN**; effects of neostigmine and pyridostigmine antagonised by • **POLYMYXINS**
- ▶ Antidepressants: plasma concentration of galantamine increased by **PAROXETINE**
- ▶ Antifungals: plasma concentration of galantamine increased by **KETOCONAZOLE**
- ▶ Antimalarials: effects of neostigmine and pyridostigmine may be diminished because of potential for **CHLOROQUINE** to increase symptoms of myasthenia gravis; effects of neostigmine and pyridostigmine may be diminished because of potential for **HYDROXYCHLOROQUINE** to increase symptoms of myasthenia gravis
- ▶ Antimuscarinics: effects of parasympathomimetics antagonised by **ANTIMUSCARINICS**
- ▶ Beta-blockers: increased risk of arrhythmias when pilocarpine given with **BETA-BLOCKERS**; effects of neostigmine and pyridostigmine antagonised by **PROPRANOLOL**
- ▶ Cytotoxics: possible increased risk of bradycardia when pilocarpine given with **CRIZOTINIB**
- ▶ Lithium: effects of neostigmine antagonised by **LITHIUM**
- ▶ Muscle Relaxants: donepezil possibly enhances effects of **SUXAMETHONIUM**; galantamine, neostigmine, pyridostigmine and rivastigmine enhance effects of **SUXAMETHONIUM**; neostigmine, pyridostigmine and rivastigmine antagonise effects of **NON-DEPOLARISING MUSCLE RELAXANTS**; donepezil possibly antagonises effects of **NON-DEPOLARISING MUSCLE RELAXANTS**

**Paracetamol** see NSAIDs

**Paricalcitol** see Vitamins

**Paroxetine** see Antidepressants, SSRI

**Pasireotide**

- ▶ Antidiabetics: pasireotide possibly reduces requirements for **ANTIDIABETICS**
- ▶ Antifungals: avoidance of pasireotide advised by manufacturer of **KETOCONAZOLE**
- ▶ Antimuscarinics: possible increased risk of bradycardia when pasireotide given with **IPRATROPIUM** or **OXYBUTYRIN**
- ▶ Beta-blockers: possible increased risk of bradycardia when pasireotide given with **CARTEOLOL**, **METOPROLOL**, **PROPRANOLOL** or **SOTALOL**
- ▶ Calcium-channel Blockers: possible increased risk of bradycardia when pasireotide given with **DILTIAZEM** or **VERAPAMIL**
- Ciclosporin: pasireotide possibly reduces plasma concentration of • **CICLOSPORIN**

**Pazopanib**

- Antibacterials: plasma concentration of pazopanib possibly increased by • **CLARITHROMYCIN** and • **TELITHROMYCIN** (reduce dose of pazopanib); plasma concentration of pazopanib possibly reduced by • **RIFAMPICIN**
- Antifungals: plasma concentration of pazopanib increased by • **KETOCONAZOLE** (reduce dose of pazopanib); plasma concentration of pazopanib possibly increased by • **ITRACONAZOLE** and • **VORICONAZOLE** (reduce dose of pazopanib)
- Antipsychotics: avoid concomitant use of cytotoxics with • **CLOZAPINE** (increased risk of agranulocytosis)
- Antivirals: plasma concentration of pazopanib possibly increased by • **ATAZANAVIR**, • **INDINAVIR** and • **RITONAVIR** (reduce dose of pazopanib); avoidance of pazopanib advised by manufacturer of • **BOCEPREVIR**; increased risk of ventricular arrhythmias when pazopanib given with • **SAQUINAVIR**—avoid concomitant use

**Pazopanib** (continued)

- Cytotoxics: plasma concentration of pazopanib increased by **LAPATINIB**
- Grapefruit Juice: manufacturer of pazopanib advises avoid concomitant use with ● **GRAPEFRUIT JUICE**
- Lipid-regulating Drugs: separating administration from pazopanib by 12 hours advised by manufacturer of **LOMITAPIDE**
- Ulcer-healing Drugs: absorption of pazopanib possibly reduced by **HISTAMINE H<sub>2</sub>-ANTAGONISTS**—manufacturer of pazopanib advises give at least 2 hours before or 10 hours after histamine H<sub>2</sub>-antagonists; absorption of pazopanib possibly reduced by **PROTON PUMP INHIBITORS**—manufacturer of pazopanib advises give at the same time as proton pump inhibitors

**Pegfilgrastim**

- Cytotoxics: neutropenia possibly exacerbated when pegfilgrastim given with **CAPECITABINE**, **FLUOROURACIL** or **TEGAFUR**

**Peginterferon Alfa** see Interferons**Pemetrexed**

- Analgesics: renal excretion of pemetrexed possibly reduced by **NSAIDS** and **ASPIRIN**—consult product literature
- Antimalarials: antifolate effect of pemetrexed increased by ● **PYRIMETHAMINE**
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)

**Penicillamine**

- Analgesics: possible increased risk of nephrotoxicity when penicillamine given with **NSAIDS**
- Antacids: absorption of penicillamine reduced by **ANTACIDS**
- Antipsychotics: avoid concomitant use of penicillamine with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Cardiac Glycosides: penicillamine possibly reduces plasma concentration of **DIGOXIN**
- Iron Salts: absorption of penicillamine reduced by **oral IRON SALTS**
- Sodium Aurothiomalate: manufacturer of penicillamine advises avoid concomitant use with **SODIUM AUROTTHIOMALATE** (increased risk of toxicity)
- Zinc: penicillamine reduces absorption of **ZINC**, also absorption of penicillamine reduced by zinc

**Penicillins**

- Allopurinol: increased risk of rash when amoxicillin, ampicillin or co-amoxiclav given with **ALLOPURINOL**
- Antibacterials: absorption of phenoxymethylpenicillin reduced by **NEOMYCIN**; effects of penicillins possibly antagonised by **TETRACYCLINES**
- Anticoagulants: an interaction between broad-spectrum penicillins and **COUMARINS** and **PHENINDIONE** has not been demonstrated in studies, but common experience in anticoagulant clinics is that INR can be altered
- Antiepileptics: manufacturer of pivmecillinam advises avoid concomitant use with ● **SODIUM VALPROATE** and ● **VALPROIC ACID**
- Cytotoxics: penicillins reduce excretion of **METHOTREXATE** (increased risk of toxicity)
- Muscle Relaxants: piperacillin enhances effects of **NON-DEPOLARISING MUSCLE RELAXANTS** and **SUXAMETHONIUM**
- Mycophenolate: co-amoxiclav possibly reduces plasma concentration of **MYCOPHENOLATE**
- Sulfapyrazone: excretion of penicillins reduced by **SULFINPYRAZONE**
- Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Pentamidine Isetionate**

- Anti-arrhythmics: increased risk of ventricular arrhythmias when pentamidine isetionate given with ● **AMIODARONE**—avoid concomitant use; possible increased risk of ventricular arrhythmias when pentamidine isetionate given with ● **DISOPYRAMIDE**
- Antibacterials: increased risk of ventricular arrhythmias when pentamidine isetionate given with *parenteral* ● **ERYTHROMYCIN**; increased risk of ventricular arrhythmias when pentamidine isetionate given with ● **MOXIFLOXACIN**—

**Pentamidine Isetionate**

- Antibacterials (continued) avoid concomitant use; increased risk of ventricular arrhythmias when pentamidine isetionate given with ● **DELAMANID**; possible increased risk of ventricular arrhythmias when *parenteral* pentamidine isetionate given with ● **TELITHROMYCIN**
- Antidepressants: avoidance of pentamidine isetionate advised by manufacturer of ● **CITALOPRAM** and ● **ESCITALOPRAM** (risk of ventricular arrhythmias); increased risk of ventricular arrhythmias when pentamidine isetionate given with ● **TRICYCLICS**
- Antifungals: possible increased risk of nephrotoxicity when pentamidine isetionate given with **AMPHOTERICIN**
- Antimalarials: avoidance of pentamidine isetionate advised by manufacturer of ● **ARTENIMOL WITH PIPERAQUINE** (possible risk of ventricular arrhythmias)
- Antipsychotics: increased risk of ventricular arrhythmias when pentamidine isetionate given with ● **AMISULPRIDE** or ● **DROPERIDOL**—avoid concomitant use; increased risk of ventricular arrhythmias when pentamidine isetionate given with ● **PHENOTHIAZINES**
- Antivirals: increased risk of hypocalcaemia when *parenteral* pentamidine isetionate given with ● **FOSCARNET**; increased risk of ventricular arrhythmias when pentamidine isetionate given with ● **SAQUINAVIR**—avoid concomitant use
- Cytotoxics: possible increased risk of ventricular arrhythmias when pentamidine isetionate given with ● **VANDETANIB**—avoid concomitant use
- Ivabradine: increased risk of ventricular arrhythmias when pentamidine isetionate given with ● **IVABRADINE**

**Pentazocine** see Opioid Analgesics**Pentostatin**

- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Cytotoxics: increased toxicity when pentostatin given with high-dose ● **CYCLOPHOSPHAMIDE**—avoid concomitant use; increased pulmonary toxicity when pentostatin given with ● **FLUDARABINE** (unacceptably high incidence of fatalities)

**Pentoxifylline**

- Aminophylline: pentoxifylline increases plasma concentration of **AMINOPHYLLINE**
- Analgesics: possible increased risk of bleeding when pentoxifylline given with **NSAIDS**; increased risk of bleeding when pentoxifylline given with ● **KETOROLAC** (avoid concomitant use)
- Theophylline: pentoxifylline increases plasma concentration of **THEOPHYLLINE**

**Perampanel**

- Antidepressants: anticonvulsant effect of antiepileptics possibly antagonised by **MAOIS** and ● **TRICYCLIC-RELATED ANTIDEPRESSANTS** (convulsive threshold lowered); anticonvulsant effect of antiepileptics antagonised by ● **SSRIS** and ● **TRICYCLICS** (convulsive threshold lowered)
- Antiepileptics: plasma concentration of perampanel reduced by ● **CARBAMAZEPINE**, ● **FOSPHENYTOIN**, ● **OXCARBAZEPINE** and ● **PHENYTOIN** (see under Perampanel, p. 398); plasma concentration of perampanel reduced by **TOPIRAMATE**
- Antifungals: plasma concentration of perampanel increased by **KETOCONAZOLE**
- Antimalarials: anticonvulsant effect of antiepileptics antagonised by ● **MEFLOQUINE**
- Antipsychotics: anticonvulsant effect of antiepileptics antagonised by ● **ANTIPSYCHOTICS** (convulsive threshold lowered)
- Anxiolytics and Hypnotics: perampanel reduces plasma concentration of **MIDAZOLAM**
- Orlistat: possible increased risk of convulsions when antiepileptics given with ● **ORLISTAT**
- Progestogens: perampanel accelerates metabolism of ● **PROGESTOGENS** (reduced contraceptive effect with combined oral contraceptives, progestogen-only oral contraceptives, contraceptive patches, vaginal rings, etonogestrel-releasing implant, and emergency hormonal contraception—see Contraceptive Interactions in BNF)

**Pergolide**

- ▶ Antipsychotics: effects of pergolide antagonised by **ANTIPSYCHOTICS**
- ▶ Memantine: effects of dopaminergics possibly enhanced by **MEMANTINE**
- ▶ Methyl dopa: antiparkinsonian effect of dopaminergics antagonised by **METHYLDOPA**
- ▶ Metoclopramide: antiparkinsonian effect of pergolide antagonised by **METOCLOPRAMIDE**

**Pericyazine** see Antipsychotics

**Perindopril** see ACE Inhibitors

**Perphenazine** see Antipsychotics

**Pertuzumab**

- Antipsychotics: avoid concomitant use of cytotoxics with **CLOZAPINE** (increased risk of agranulocytosis)
- Vaccines: risk of generalised infections when monoclonal antibodies given with live **VACCINES**—avoid concomitant use

**Pethidine** see Opioid Analgesics

**Phenelzine** see MAOIs

**Phenindione**

**NOTE** Change in patient's clinical condition particularly associated with liver disease, intercurrent illness, or drug administration, necessitates more frequent testing. Major changes in diet (especially involving salads and vegetables) and in alcohol consumption may also affect anticoagulant control

- Alcohol: anticoagulant control with phenindione may be affected by major changes in consumption of **ALCOHOL**
- Anabolic Steroids: anticoagulant effect of phenindione enhanced by **ANABOLIC STEROIDS**
- Analgesics: anticoagulant effect of phenindione possibly enhanced by **NSAIDS**; increased risk of haemorrhage when anticoagulants given with **intravenous** **DICLOFENAC** (avoid concomitant use, including low-dose heparins); increased risk of haemorrhage when anticoagulants given with **KETOROLAC** (avoid concomitant use, including low-dose heparins); increased risk of bleeding when phenindione given with **ASPIRIN** (due to antiplatelet effect)
- Anti-arrhythmics: metabolism of phenindione inhibited by **AMIODARONE** (enhanced anticoagulant effect); anticoagulant effect of phenindione possibly enhanced by **DRONEDARONE**
- Antibacterials: experience in anticoagulant clinics suggests that INR possibly altered when phenindione is given with **NEOMYCIN** (given for local action on gut); anticoagulant effect of phenindione possibly enhanced by **LEVOFLOXACIN** and **TETRACYCLINES**; an interaction between phenindione and broad-spectrum **PENICILLINS** has not been demonstrated in studies, but common experience in anticoagulant clinics is that INR can be altered; metabolism of phenindione possibly inhibited by **SULFONAMIDES**
- Anticoagulants: increased risk of haemorrhage when other anticoagulants given with **APIXABAN**, **DABIGATRAN** and **RIVAROXABAN** (avoid concomitant use except when switching with other anticoagulants or using heparin to maintain catheter patency)
- Antivirals: anticoagulant effect of phenindione possibly enhanced by **RITONAVIR**
- Clopidogrel: anticoagulant effect of phenindione enhanced due to antiplatelet action of **CLOPIDOGREL**
- ▶ Corticosteroids: anticoagulant effect of phenindione may be enhanced or reduced by **CORTICOSTEROIDS**
- ▶ Cytotoxics: avoidance of phenindione advised by manufacturer of **IBRUTINIB**
- Dipyridamole: anticoagulant effect of phenindione enhanced due to antiplatelet action of **DIPYRIDAMOLE**
- Enteral Foods: anticoagulant effect of phenindione antagonised by vitamin K (present in some **ENTERAL FEEDS**)
- ▶ Iloprost: increased risk of bleeding when phenindione given with **ILOPROST**
- Lipid-regulating Drugs: anticoagulant effect of phenindione may be enhanced or reduced by **COLESTYRAMINE**; anticoagulant effect of phenindione possibly enhanced by **ROSUVASTATIN**; anticoagulant effect of phenindione enhanced by **FIBRATES**

**Phenindione** (continued)

- Oestrogens: anticoagulant effect of phenindione antagonised by **OESTROGENS**
- ▶ Prasugrel: possible increased risk of bleeding when phenindione given with **PRASUGREL**
- Progestogens: anticoagulant effect of phenindione antagonised by **PROGESTOGENS**
- Testolactone: anticoagulant effect of phenindione enhanced by **TESTOLACTONE**
- Testosterone: anticoagulant effect of phenindione enhanced by **TESTOSTERONE**
- Thyroid Hormones: anticoagulant effect of phenindione enhanced by **THYROID HORMONES**
- Vitamins: anticoagulant effect of phenindione antagonised by **VITAMIN K**

**Phenobarbital**

- ▶ Alcohol: increased sedative effect when phenobarbital given with **ALCOHOL**
- Aminophylline: phenobarbital accelerates metabolism of **AMINOPHYLLINE** (reduced effect)
- ▶ Analgesics: phenobarbital reduces plasma concentration of **METHADONE**; phenobarbital possibly accelerates metabolism of **PARACETAMOL** (also isolated reports of hepatotoxicity)
- Anthelmintics: phenobarbital reduces plasma concentration of **ALBENDAZOLE** and **PRAZIQUANTEL**—consider increasing albendazole and praziquanTEL dose when given for systemic infections
- Anti-arrhythmics: phenobarbital accelerates metabolism of **DISOPYRAMIDE** (reduced plasma concentration); phenobarbital possibly reduces plasma concentration of **DRONEDARONE**—avoid concomitant use; phenobarbital possibly accelerates metabolism of **PROPAFENONE**
- Antibacterials: phenobarbital accelerates metabolism of **METRONIDAZOLE** (reduced effect); phenobarbital possibly reduces plasma concentration of **RIFAMPICIN**; phenobarbital accelerates metabolism of **DOXYCYCLINE** (reduced plasma concentration); phenobarbital possibly accelerates metabolism of **CHLORAMPHENICOL** (reduced plasma concentration); phenobarbital reduces plasma concentration of **TELITHROMYCIN** (avoid during and for 2 weeks after phenobarbital)
- Anticoagulants: phenobarbital possibly reduces plasma concentration of **APIXABAN**; phenobarbital accelerates metabolism of **COUMARINS** (reduced anticoagulant effect); phenobarbital possibly reduces plasma concentration of **RIVAROXABAN**—manufacturer of rivaroxaban advises monitor for signs of thrombosis
- Antidepressants: phenobarbital possibly reduces plasma concentration of **REBOXETINE**; phenobarbital reduces plasma concentration of **PAROXETINE**; phenobarbital accelerates metabolism of **MIANSERIN** (reduced plasma concentration); anticonvulsant effect of antiepileptics possibly antagonised by **MAOIs** and **TRICYCLIC-RELATED ANTIDEPRESSANTS** (convulsive threshold lowered); anticonvulsant effect of antiepileptics antagonised by **SSRIs** and **TRICYCLICS** (convulsive threshold lowered); plasma concentration of phenobarbital possibly reduced by **ST JOHN'S WORT**—avoid concomitant use; phenobarbital possibly accelerates metabolism of **TRICYCLICS** (reduced plasma concentration)
- Antiepileptics: plasma concentration of phenobarbital possibly increased by **CARBAMAZEPINE**; phenobarbital possibly reduces plasma concentration of **ETHOSUXIMIDE**, **RUFINAMIDE** and **TOPIRAMATE**; plasma concentration of phenobarbital often increased by **FOSPHENYTOIN** and **PHENYTOIN**, plasma concentration of fosphenytoin and phenytoin often reduced but may be increased; phenobarbital reduces plasma concentration of **LAMOTRIGINE**, **TIAGABINE** and **ZONISAMIDE**; plasma concentration of phenobarbital increased by **OXCARBAZEPINE**, also plasma concentration of an active metabolite of oxcarbazepine reduced; plasma concentration of phenobarbital increased by **SODIUM VALPROATE** and **VALPROIC ACID** (also plasma concentration of sodium valproate and valproic acid reduced); plasma concentration of phenobarbital increased by **STIRIPENTOL**
- Antifungals: phenobarbital possibly reduces plasma concentration of **ITRACONAZOLE** and **POSACONAZOLE**;



**Phenobarbital**

- **Antifungals** (continued)
  - phenobarbital possibly reduces plasma concentration of ● **VORICONAZOLE**—avoid concomitant use; phenobarbital reduces absorption of **GRISOFULVIN** (reduced effect)
- **Antimalarials**: avoidance of phenobarbital advised by manufacturer of **ARTENIMOL** with **PIPERAQUINE**; anticonvulsant effect of antiepileptics antagonised by ● **MEFLOQUINE**
- **Antipsychotics**: anticonvulsant effect of antiepileptics antagonised by ● **ANTIPSYCHOTICS** (convulsive threshold lowered); phenobarbital accelerates metabolism of **HALOPERIDOL** (reduced plasma concentration); plasma concentration of both drugs reduced when phenobarbital given with **CHLORPROMAZINE**; phenobarbital possibly reduces plasma concentration of ● **ARIPRAZOLE** (avoid concomitant use or consider increasing the dose of aripiprazole—consult aripiprazole product literature); phenobarbital possibly reduces plasma concentration of **CLOZAPINE**; phenobarbital possibly reduces plasma concentration of ● **LURASIDONE**—avoid concomitant use
- **Antivirals**: phenobarbital possibly reduces plasma concentration of **ABACAVIR**, **DARUNAVIR**, **FOSAMPRENAVIR**, ● **INDINAVIR**, ● **LOPINAVIR** and ● **SAQUINAVIR**; avoidance of phenobarbital advised by manufacturer of ● **BOCEPREVIR** and ● **RILPIVIRINE** (plasma concentration of boceprevir and rilpivirine possibly reduced); phenobarbital possibly reduces plasma concentration of ● **DACLATASVIR** and ● **SIMEPREVIR**—manufacturer of daclatasvir and simeprevir advises avoid concomitant use; avoidance of phenobarbital advised by manufacturer of **DOLUTEGRAVIR**, ● **ELVITEGRAVIR**, **ETRAVIRINE**, **SOFOSBUVIR** and ● **TELAPREVIR**
- **Anxiolytics and Hypnotics**: increased sedative effect when phenobarbital given with **ANXIOLYTICS AND HYPNOTICS**; phenobarbital often reduces plasma concentration of **CLONAZEPAM**
- **Appetitant**: phenobarbital possibly reduces plasma concentration of **APREPITANT**
- **Avanafil**: phenobarbital possibly reduces plasma concentration of **AVANAFIL**—manufacturer of avanafil advises avoid concomitant use
- **Beta-blockers**: phenobarbital possibly reduces plasma concentration of **PROPRANOLOL**
- **Caffeine citrate**: effects of phenobarbital possibly antagonised by **CAFFEINE CITRATE**
- **Calcium-channel Blockers**: phenobarbital probably reduces effects of ● **CALCIUM-CHANNEL BLOCKERS**; avoidance of phenobarbital advised by manufacturer of **ISRADIPINE**; avoidance of phenobarbital advised by manufacturer of ● **NIMODIPINE** (plasma concentration of nimodipine reduced)
- **Cannabis Extract**: phenobarbital possibly reduces plasma concentration of ● **CANNABIS EXTRACT**—manufacturer of cannabis extract advises avoid concomitant use
- **Ciclosporin**: phenobarbital accelerates metabolism of ● **CYCLOSPORIN** (reduced plasma concentration)
- **Cobicistat**: phenobarbital possibly reduces plasma concentration of ● **COBICISTAT**—manufacturer of cobicistat advises avoid concomitant use
- **Corticosteroids**: phenobarbital accelerates metabolism of ● **CORTICOSTEROIDS** (reduced effect)
- **Cytotoxics**: phenobarbital possibly decreases plasma concentration of **AXITINIB** (increase dose of axitinib—consult axitinib product literature); phenobarbital possibly reduces plasma concentration of **BORTEZOMIB**, ● **BOSUTINIB**, **CRIZOTINIB** and **PONATINIB**—manufacturer of bortezomib, bosutinib, crizotinib and ponatinib advises avoid concomitant use; phenobarbital possibly reduces plasma concentration of ● **CABOZANTINIB**—avoid concomitant use; avoidance of phenobarbital advised by manufacturer of ● **CABAZITAXEL**, **DABRAFENIB** and **GEFITINIB**; avoidance of phenobarbital advised by manufacturer of **DASATINIB** and **VANDETANIB** (plasma concentration of dasatinib and vandetanib possibly reduced); phenobarbital possibly reduces plasma concentration of **ETOPOSIDE**; phenobarbital reduces plasma concentration of **IRINOTECAN** and its active metabolite; manufacturer of procarbazine advises possible increased risk

**Phenobarbital**

- **Cytotoxics** (continued)
    - of hypersensitivity reactions when phenobarbital given with **PROCARBAZINE**
  - **Diuretics**: phenobarbital reduces plasma concentration of ● **EPLERENONE**—avoid concomitant use; increased risk of osteomalacia when phenobarbital given with **CARBONIC ANHYDRASE INHIBITORS**
  - **Folates**: plasma concentration of phenobarbital possibly reduced by **FOLATES**
  - **Fosaprepitant**: phenobarbital possibly reduces plasma concentration of **FOSAPREPITANT**
  - **Hormone Antagonists**: phenobarbital possibly reduces plasma concentration of ● **ABIRATERONE**—manufacturer of abiraterone advises avoid concomitant use; phenobarbital accelerates metabolism of **TOREMIFENE** (reduced plasma concentration)
  - **Ivacaftor**: phenobarbital possibly reduces plasma concentration of ● **IVACAFTOR**—manufacturer of ivacaftor advises avoid concomitant use
  - **Leukotriene Receptor Antagonists**: phenobarbital reduces plasma concentration of **MONTELUKAST**
  - **Oestrogens**: phenobarbital accelerates metabolism of ● **OESTROGENS** (reduced contraceptive effect with combined oral contraceptives, contraceptive patches, and vaginal rings—see Contraceptive Interactions in BNF)
  - **Orlistat**: possible increased risk of convulsions when antiepileptics given with ● **ORLISTAT**
  - **Progestogens**: phenobarbital accelerates metabolism of ● **PROGESTOGENS** (reduced contraceptive effect with combined oral contraceptives, progestogen-only oral contraceptives, contraceptive patches, vaginal rings, etonogestrel-releasing implant, and emergency hormonal contraception—see Contraceptive Interactions in BNF)
  - **Roflumilast**: phenobarbital possibly inhibits effects of **ROFLUMILAST** (manufacturer of roflumilast advises avoid concomitant use)
  - **Sodium Oxybate**: avoidance of phenobarbital advised by manufacturer of **SODIUM OXYBATE**
  - **Sympathomimetics**: plasma concentration of phenobarbital possibly increased by **METHYLPHENIDATE**
  - **Tacrolimus**: phenobarbital reduces plasma concentration of ● **TACROLIMUS**
  - **Theophylline**: phenobarbital accelerates metabolism of ● **THEOPHYLLINE** (reduced effect)
  - **Thyroid Hormones**: phenobarbital accelerates metabolism of **THYROID HORMONES** (may increase requirements for thyroid hormones in hypothyroidism)
  - **Ticagrelor**: phenobarbital possibly reduces plasma concentration of **TICAGRELOL**
  - **Ulipristal**: avoidance of phenobarbital advised by manufacturer of ● **ULIPRISTAL** (contraceptive effect of ulipristal possibly reduced)
  - **Vitamins**: phenobarbital possibly increases requirements for **ALFACALCIDOL**, **CALCITRIOL**, **COLECALCIFEROL**, **DIHYDROTACHYSTEROL**, **ERGOCALCIFEROL**, **PARICALCITOL** or **VITAMIN D**
- Phenothiazines** see Antipsychotics  
**Phenoxybenzamine** see Alpha-blockers  
**Phenoxymethylpenicillin** see Penicillins  
**Phentolamine** see Alpha-blockers  
**Phenylephrine** see Sympathomimetics  
**Phenytoin**
- **Alcohol**: plasma concentration of phenytoin possibly reduced by chronic heavy consumption of **ALCOHOL**
  - **Aminophylline**: plasma concentration of both drugs reduced when phenytoin given with ● **AMINOPHYLLINE**
  - **Analgesics**: excretion of phenytoin possibly reduced by **ACEMETACIN** (increased risk of toxicity); phenytoin possibly accelerates metabolism of **FENTANYL** (reduced effect); phenytoin accelerates metabolism of **METHADONE** (reduced effect and risk of withdrawal effects); phenytoin possibly increases risk of ● **PETHIDINE** toxicity; effects of phenytoin enhanced by **ASPIRIN**; phenytoin possibly accelerates

**Phenytoin**

- Analgesics (continued)  
metabolism of **PARACETAMOL** (also isolated reports of hepatotoxicity)
- Antacids: absorption of phenytoin reduced by **ANTACIDS**
- Anthelmintics: phenytoin reduces plasma concentration of ● **ALBENDAZOLE** and ● **PRAZIQUANTEL**—consider increasing albendazole and praziquantel dose when given for systemic infections; plasma concentration of phenytoin possibly increased by **LEVAMISOLE**
- Anti-arrhythmics: metabolism of phenytoin inhibited by ● **AMIODARONE** (increased plasma concentration); phenytoin reduces plasma concentration of **DISOPYRAMIDE**; phenytoin possibly reduces plasma concentration of ● **DRONEDARONE**—avoid concomitant use
- Antibacterials: metabolism of phenytoin inhibited by **CLARITHROMYCIN** (increased plasma concentration); metabolism of phenytoin possibly inhibited by **METRONIDAZOLE** (increased plasma concentration); plasma concentration of phenytoin increased or decreased by **CIPROFLOXACIN**; phenytoin accelerates metabolism of **DOXYCYCLINE** (reduced plasma concentration); phenytoin possibly reduces plasma concentration of ● **BEDAQUILINE**—manufacturer of bedaquiline advises avoid concomitant use; plasma concentration of phenytoin increased by ● **CHLORAMPHENICOL** (increased risk of toxicity); metabolism of phenytoin possibly inhibited by **ISONIAZID** (increased risk of toxicity); metabolism of phenytoin accelerated by ● **RIFAMYCINS** (reduced plasma concentration); plasma concentration of phenytoin possibly increased by **SULFONAMIDES**; phenytoin reduces plasma concentration of ● **TELITHROMYCIN** (avoid during and for 2 weeks after phenytoin); plasma concentration of phenytoin increased by ● **TRIMETHOPRIM** (also increased antifolate effect)
- Anticoagulants: phenytoin possibly reduces plasma concentration of ● **APIXABAN**; phenytoin accelerates metabolism of ● **COUMARINS** (possibility of reduced anticoagulant effect, but enhancement also reported); phenytoin possibly reduces plasma concentration of **DABIGATRAN**—manufacturer of dabigatran advises avoid concomitant use; phenytoin possibly reduces plasma concentration of ● **RIVAROXABAN**—manufacturer of rivaroxaban advises monitor for signs of thrombosis
- Antidepressants: plasma concentration of phenytoin increased by ● **FLUOXETINE** and ● **FLUVOXAMINE**; phenytoin reduces plasma concentration of ● **MIANSERIN**, **MIRTAZAPINE** and **PAROXETINE**; plasma concentration of phenytoin possibly increased by **SERTRALINE**, also plasma concentration of sertraline possibly reduced; anticonvulsant effect of antiepileptics possibly antagonised by **MAOIs** and ● **TRICYCLIC-RELATED ANTIDEPRESSANTS** (convulsive threshold lowered); anticonvulsant effect of antiepileptics antagonised by ● **SSRIs** and ● **TRICYCLICS** (convulsive threshold lowered); plasma concentration of phenytoin possibly reduced by ● **ST JOHN'S WORT**—avoid concomitant use; phenytoin possibly reduces plasma concentration of ● **TRICYCLICS**
- Antidiabetics: plasma concentration of phenytoin transiently increased by **TOLBUTAMIDE** (possibility of toxicity)
- Antiepileptics: plasma concentration of both drugs often reduced when phenytoin given with **CARBAMAZEPINE**, also plasma concentration of phenytoin may be increased; phenytoin reduces plasma concentration of **ESLICARBAZEPINE**, also plasma concentration of phenytoin increased; plasma concentration of phenytoin possibly increased by ● **ETHOSUXIMIDE**, also plasma concentration of ethosuximide possibly reduced; phenytoin reduces plasma concentration of **LAMOTRIGINE**, **TIAGABINE** and **ZONISAMIDE**; plasma concentration of phenytoin increased by **OXCARBAZEPINE**, also plasma concentration of an active metabolite of oxcarbazepine reduced; phenytoin reduces plasma concentration of ● **PERAMPANEL** (see under Perampanel, p. 398); phenytoin often increases plasma concentration of **PHENOBARBITAL** and **PRIMIDONE**, plasma concentration of phenytoin often reduced but may be increased; phenytoin possibly reduces plasma concentration of **RETIGABINE**;

**Phenytoin**

- Antiepileptics (continued)  
phenytoin possibly reduces plasma concentration of **RUFINAMIDE**, also plasma concentration of phenytoin possibly increased; plasma concentration of phenytoin increased or possibly reduced when given with **SODIUM VALPROATE** and **VALPROIC ACID**, also plasma concentration of sodium valproate and valproic acid reduced; plasma concentration of phenytoin increased by ● **STIRIPENTOL**; plasma concentration of phenytoin increased by ● **TOPIRAMATE** (also plasma concentration of topiramate reduced); plasma concentration of phenytoin reduced by **VIGABATRIN**
- Antifungals: phenytoin reduces plasma concentration of ● **KETOCONAZOLE** and ● **POSACONAZOLE**; anticonvulsant effect of phenytoin enhanced by ● **MICONAZOLE** (plasma concentration of phenytoin increased); plasma concentration of phenytoin increased by ● **FLUCONAZOLE** (consider reducing dose of phenytoin); phenytoin reduces plasma concentration of ● **ITRACONAZOLE**—avoid concomitant use; plasma concentration of phenytoin increased by ● **VORICONAZOLE**, also phenytoin reduces plasma concentration of voriconazole (increase dose of voriconazole and also monitor for phenytoin toxicity); phenytoin possibly reduces plasma concentration of **CASPOFUNGIN**—consider increasing dose of caspofungin
- Antimalarials: avoidance of phenytoin advised by manufacturer of **ARTENIMOL WITH PIPERAQUINE**; anticonvulsant effect of antiepileptics antagonised by ● **MEFLOQUINE**; anticonvulsant effect of phenytoin antagonised by ● **PYRIMETHAMINE**, also increased antifolate effect
- Antipsychotics: anticonvulsant effect of antiepileptics antagonised by ● **ANTIPSYCHOTICS** (convulsive threshold lowered); phenytoin reduces plasma concentration of **HALOPERIDOL**; plasma concentration of phenytoin possibly increased or decreased by **CHLORPROMAZINE**; phenytoin possibly reduces plasma concentration of ● **ARIPIPRAZOLE** (avoid concomitant use or consider increasing the dose of aripiprazole—consult aripiprazole product literature); phenytoin accelerates metabolism of **CLOZAPINE** and **QUETIAPINE** (reduced plasma concentration); phenytoin possibly reduces plasma concentration of ● **LURASIDONE**—avoid concomitant use
- Antivirals: phenytoin possibly reduces plasma concentration of **ABACAVIR**, **DARUNAVIR**, **LOPINAVIR** and **SAQUINAVIR**; avoidance of phenytoin advised by manufacturer of ● **BOCEPREVIR** and ● **RILPIVIRINE** (plasma concentration of boceprevir and rilpivirine possibly reduced); phenytoin possibly reduces plasma concentration of ● **DACLATASVIR** and ● **SIMEPREVIR**—manufacturer of daclatasvir and simeprevir advises avoid concomitant use; avoidance of phenytoin advised by manufacturer of **DOLUTEGRAVIR**, ● **ELVITEGRAVIR**, **ETRAVIRINE**, **SOFOSBUVIR** and ● **TELAPREVIR**; phenytoin possibly reduces plasma concentration of ● **INDINAVIR**, also plasma concentration of phenytoin possibly increased; phenytoin possibly reduces plasma concentration of **RITONAVIR**, also plasma concentration of phenytoin possibly affected; plasma concentration of phenytoin increased or decreased by **ZIDOVUDINE**
- Anxiolytics and Hypnotics: phenytoin often reduces plasma concentration of **CLONAZEPAM**; plasma concentration of phenytoin increased or decreased by **DIAZEPAM**; plasma concentration of phenytoin possibly increased or decreased by **BENZODIAZEPINES**
- Appetit: phenytoin possibly reduces plasma concentration of **APREPITANT**
- Bupropion: phenytoin reduces plasma concentration of **BUPROPION**
- Caffeine citrate: phenytoin reduces plasma concentration of **CAFFEINE CITRATE**
- Calcium-channel Blockers: phenytoin reduces effects of **FELODIPINE** and **VERAPAMIL**; avoidance of phenytoin advised by manufacturer of **ISRADIPINE**; avoidance of phenytoin advised by manufacturer of **NIMODIPINE** (plasma concentration of nimodipine possibly reduced); plasma

## Phenytoin

- Calcium-channel Blockers (continued)
  - concentration of phenytoin increased by ● **DILTIAZEM** but also effect of diltiazem reduced
- Cannabis Extract: phenytoin possibly reduces plasma concentration of ● **CANNABIS EXTRACT**—manufacturer of cannabis extract advises avoid concomitant use
- Cardiac Glycosides: phenytoin possibly reduces plasma concentration of **DIGOXIN**
- Ciclosporin: phenytoin accelerates metabolism of ● **CICLOSPORIN** (reduced plasma concentration)
- Cobicistat: phenytoin possibly reduces plasma concentration of ● **COBICISTAT**—manufacturer of cobicistat advises avoid concomitant use
- Corticosteroids: phenytoin accelerates metabolism of ● **CORTICOSTEROIDS** (reduced effect)
- Cytotoxics: phenytoin possibly reduces plasma concentration of **BUSULFAN**, **ERIBULIN** and **ETOPOSIDE**; metabolism of phenytoin possibly inhibited by **CAPECITABINE**, **FLUOROURACIL** and **TEGAFUR** (increased risk of toxicity); phenytoin increases antifolate effect of **METHOTREXATE**; plasma concentration of phenytoin possibly reduced by **CISPLATIN**; phenytoin possibly decreases plasma concentration of **AXITINIB** (increase dose of axitinib—consult axitinib product literature); phenytoin possibly reduces plasma concentration of **BORTEZOMIB**, ● **BOSUTINIB**, **CRIZOTINIB**, ● **IBRUTINIB**, ● **IDELALISIB** and **PONATINIB**—manufacturer of bortezomib, bosutinib, crizotinib, ibrutinib, idelalisib and ponatinib advises avoid concomitant use; phenytoin possibly reduces plasma concentration of ● **CABOZANTINIB**—avoid concomitant use; avoidance of phenytoin advised by manufacturer of ● **CABAZITAXEL**, **DABRAFENIB**, **GEFITINIB**, ● **LAPATINIB** and **VMURAFENIB**; avoidance of phenytoin advised by manufacturer of **DASATINIB** and ● **VISMODEGIB** (plasma concentration of dasatinib and vismodegib possibly reduced); phenytoin reduces plasma concentration of ● **IMATINIB**—avoid concomitant use; phenytoin reduces plasma concentration of **IRINOTECAN** and its active metabolite; manufacturer of procabazine advises possible increased risk of hypersensitivity reactions when phenytoin given with **PROCABAZINE**
- Dextrazoxane: absorption of phenytoin possibly reduced by ● **DEXRAZOXANE**
- Diazoxide: plasma concentration of phenytoin reduced by **DIAZOXIDE**, also effect of diazoxide may be reduced
- Disulfiram: metabolism of phenytoin inhibited by ● **DISULFIRAM** (increased risk of toxicity)
- Diuretics: plasma concentration of phenytoin possibly increased by ● **ACETAZOLAMIDE**; phenytoin antagonises effects of **FUROSEMIDE**; phenytoin reduces plasma concentration of ● **EPLERENONE**—avoid concomitant use; increased risk of osteomalacia when phenytoin given with **CARBONIC HYDRASE INHIBITORS**
- Dopaminergics: phenytoin possibly reduces effects of **CO-BENELDOPA**, **CO-CARELDOPA** and **LEVODOPA**
- Enteral Foods: absorption of phenytoin possibly reduced by **ENTERAL FEEDS**
- Folate: plasma concentration of phenytoin possibly reduced by **FOLATES**
- Fosaprepitant: phenytoin possibly reduces plasma concentration of **FOSAPREPITANT**
- Hormone Antagonists: phenytoin possibly reduces plasma concentration of ● **ABIRATERONE**—manufacturer of abiraterone advises avoid concomitant use; phenytoin possibly accelerates metabolism of **TOREMIFENE**
- 5HT<sub>2</sub>-receptor Antagonists: phenytoin accelerates metabolism of **ONDANSETRON** (reduced effect)
- Ivacaftor: phenytoin possibly reduces plasma concentration of ● **IVACFTOR**—manufacturer of ivacaftor advises avoid concomitant use
- Leflunomide: plasma concentration of phenytoin possibly increased by **LEFLUNOMIDE**
- Lipid-regulating Drugs: absorption of phenytoin possibly reduced by **COLESEVELAM**; combination of phenytoin with **FLUVASTATIN** may increase plasma concentration of either drug (or both)

## Phenytoin (continued)

- Lithium: neurotoxicity may occur when phenytoin given with **LITHIUM** without increased plasma concentration of lithium
  - Macitentan: avoidance of phenytoin advised by manufacturer of **MACITENTAN**
  - Modafinil: plasma concentration of phenytoin possibly increased by **MODAFINIL**
  - Muscle Relaxants: *long-term use* of phenytoin reduces effects of ● **NON-DEPOLARISING MUSCLE RELAXANTS** (but *acute use* of phenytoin might increase effects of non-depolarising muscle relaxants)
  - Oestrogens: phenytoin accelerates metabolism of ● **OESTROGENS** (reduced contraceptive effect with combined oral contraceptives, contraceptive patches, and vaginal rings—see Contraceptive Interactions in BNF)
  - Orlistat: possible increased risk of convulsions when antiepileptics given with ● **ORLISTAT**
  - Progesterones: phenytoin accelerates metabolism of ● **PROGESTOGENS** (reduced contraceptive effect with combined oral contraceptives, progesterone-only oral contraceptives, contraceptive patches, vaginal rings, etonogestrel-releasing implant, and emergency hormonal contraception—see Contraceptive Interactions in BNF)
  - Roflumilast: phenytoin possibly inhibits effects of **ROFLUMILAST** (manufacturer of roflumilast advises avoid concomitant use)
  - Sulfipyrazone: plasma concentration of phenytoin increased by ● **SULFINPYRAZONE**
  - Sympathomimetics: plasma concentration of phenytoin increased by **METHYLPHENIDATE**
  - Tacrolimus: phenytoin reduces plasma concentration of **TACROLIMUS**, also plasma concentration of phenytoin possibly increased
  - Theophylline: plasma concentration of both drugs reduced when phenytoin given with ● **THEOPHYLLINE**
  - Thyroid Hormones: phenytoin accelerates metabolism of **THYROID HORMONES** (may increase requirements in hypothyroidism), also plasma concentration of phenytoin possibly increased
  - Tibolone: phenytoin accelerates metabolism of **TIBOLONE**
  - Ticagrelor: phenytoin possibly reduces plasma concentration of **TICAGRELOR**
  - Ulcer-healing Drugs: metabolism of phenytoin inhibited by ● **CIMETIDINE** (increased plasma concentration); effects of phenytoin enhanced by ● **ESOMEPRAZOLE**; effects of phenytoin possibly enhanced by **OMEPRAZOLE**; absorption of phenytoin reduced by ● **SUCRALFATE**
  - Ulipristal: avoidance of phenytoin advised by manufacturer of ● **ULIPRISTAL** (contraceptive effect of ulipristal possibly reduced)
  - Vaccines: effects of phenytoin enhanced by **INFLUENZA VACCINE**
  - Vitamins: phenytoin possibly increases requirements for **ALFACALCIDOL**, **CALCITRIOL**, **COLECALCIFEROL**, **DIHYDROTACHYSTEROL**, **ERGOCALCIFEROL**, **PARICALCITOL** or **VITAMIN D**
- Pholcodine**
- Antidepressants: manufacturer of pholcodine advises avoid for 2 weeks after stopping **MAOIS**
- Phosphodiesterase Type-3 Inhibitors**
- Anagrelide: avoidance of enoximone and milrinone advised by manufacturer of ● **ANAGRELIDE**
- Pilocarpine** see Parasympathomimetics
- Pimozide** see Antipsychotics
- Pindolol** see Beta-blockers
- Pioglitazone** see Antidiabetics
- Piperacillin** see Penicillins
- Piperaquine** see Arteminimol with Piperaquine
- Piprotiazine** see Antipsychotics
- Pirfenidone**
- Antibacterials: plasma concentration of pirfenidone increased by ● **CIPROFLOXACIN**—see under Pirfenidone, p. 260
  - Antidepressants: plasma concentration of pirfenidone increased by ● **FLUVOXAMINE**—manufacturer of pirfenidone advises avoid concomitant use
  - Grapefruit Juice: manufacturer of pirfenidone advises avoid concomitant use with **GRAPEFRUIT JUICE**

**Piroxicam** see NSAIDs

**Pivmecillinam** see Penicillins

### Pixantrone

- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)
- Vaccines: risk of generalised infections when pixantrone given with live
  - **VACCINES**—avoid concomitant use

### Pizotifen

- ▶ Adrenergic Neurone Blockers: pizotifen antagonises hypotensive effect of **ADRENERGIC NEURONE BLOCKERS**

### Platinum Compounds

- Aldesleukin: avoidance of cisplatin advised by manufacturer of
  - **ALDESLEUKIN**
- Antibacterials: increased risk of nephrotoxicity and possibly of ototoxicity when platinum compounds given with
  - **AMINOGLYCOSIDES** or • **POLYMYXINS**; increased risk of nephrotoxicity and ototoxicity when platinum compounds given with **CAPREOMYCIN**; increased risk of nephrotoxicity and possibly of ototoxicity when cisplatin given with **VANCOMYCIN**
- ▶ Antiepileptics: cisplatin possibly reduces plasma concentration of **FOSPHENYTOIN** and **PHENYTOIN**
- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)
- Cytotoxics: increased risk of toxicity when cisplatin given with **IFOSFAMIDE**; increased pulmonary toxicity when cisplatin given with • **BLEOMYCIN** and • **METHOTREXATE**
- ▶ Diuretics: increased risk of nephrotoxicity and ototoxicity when platinum compounds given with **DIURETICS**

**Pneumococcal Vaccine** see Vaccines

**Polimyelitis Vaccine** see Vaccines

### Polymyxins

- Antibacterials: increased risk of nephrotoxicity when colistimethate sodium or polymyxins given with **AMINOGLYCOSIDES**; increased risk of nephrotoxicity when colistimethate sodium or polymyxins given with **CAPREOMYCIN**; increased risk of nephrotoxicity when polymyxins given with **VANCOMYCIN**; increased risk of nephrotoxicity and ototoxicity when colistimethate sodium given with **VANCOMYCIN**
- ▶ Antifungals: increased risk of nephrotoxicity when polymyxins given with **AMPHOTERICIN**
- Ciclosporin: increased risk of nephrotoxicity when polymyxins given with • **CICLOSPORIN**
- Cytotoxics: increased risk of nephrotoxicity and possibly of ototoxicity when polymyxins given with • **PLATINUM COMPOUNDS**
- Diuretics: increased risk of ototoxicity when polymyxins given with • **LOOP DIURETICS**
- Muscle Relaxants: polymyxins enhance effects of • **NON-DEPOLARISING MUSCLE RELAXANTS** and • **SUXAMETHONIUM**
- Parasympathomimetics: polymyxins antagonise effects of • **NEOSTIGMINE** and • **PYRIDOSTIGMINE**
- ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Polysaccharide-iron Complex** see Iron salts

### Polystyrene Sulfonate Resins

- Antacids: risk of intestinal obstruction when polystyrene sulfonate resins given with **ALUMINIUM HYDROXIDE**; risk of metabolic alkalosis when polystyrene sulfonate resins given with **ORAL MAGNESIUM SALTS**
- ▶ Thyroid Hormones: polystyrene sulfonate resins reduce absorption of **LEVOTHYROXINE**

### Pomalidomide

- Antidepressants: plasma concentration of pomalidomide increased by • **FLUVOXAMINE**

### Ponatinib

- Antibacterials: plasma concentration of ponatinib possibly increased by **CLARITHROMYCIN** and **TELITHROMYCIN**—consider reducing initial dose of ponatinib (see under Ponatinib, p. 814); plasma concentration of ponatinib possibly reduced by **RIFABUTIN**—manufacturer of ponatinib advises avoid concomitant use; plasma concentration of ponatinib reduced by • **RIFAMPICIN**—manufacturer of ponatinib advises avoid concomitant use

**Ponatinib** (continued)

- ▶ Antidepressants: plasma concentration of ponatinib possibly reduced by **ST JOHN'S WORT**—manufacturer of ponatinib advises avoid concomitant use
- ▶ Antiepileptics: plasma concentration of ponatinib possibly reduced by **CARBAMAZEPINE**, **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**—manufacturer of ponatinib advises avoid concomitant use
- ▶ Antifungals: plasma concentration of ponatinib increased by **KETOCONAZOLE**; plasma concentration of ponatinib possibly increased by **ITRACONAZOLE** and **VORICONAZOLE**—consider reducing initial dose of ponatinib (see under Ponatinib, p. 814)
- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)
- ▶ Antivirals: plasma concentration of ponatinib possibly increased by **INDINAVIR**, **RITONAVIR** and **SAQUINAVIR**—consider reducing initial dose of ponatinib (see under Ponatinib, p. 814)
- ▶ Grapefruit Juice: plasma concentration of ponatinib possibly increased by **GRAPEFRUIT JUICE**

**Posaconazole** see Antifungals, Triazole

**Potassium Canrenoate** see Diuretics

**Potassium Aminobenzoate**

- ▶ Antibacterials: potassium aminobenzoate inhibits effects of **SULFONAMIDES**

**Potassium Bicarbonate** see Potassium Salts

**Potassium Chloride** see Potassium Salts

**Potassium Citrate** see Potassium Salts

### Potassium Salts

**NOTE** Includes salt substitutes

- ACE Inhibitors: increased risk of severe hyperkalaemia when potassium salts given with • **ACE INHIBITORS**
- ▶ Aliskiren: increased risk of hyperkalaemia when potassium salts given with **ALISKIREN**
- Angiotensin-II Receptor Antagonists: increased risk of hyperkalaemia when potassium salts given with
  - **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- ▶ Antibacterials: avoid concomitant use of potassium citrate with **METHENAMINE**
- Ciclosporin: increased risk of hyperkalaemia when potassium salts given with • **CICLOSPORIN**
- Diuretics: increased risk of hyperkalaemia when potassium salts given with • **POTASSIUM-SPARING DIURETICS AND ALDOSTERONE ANTAGONISTS**
- Tacrolimus: increased risk of hyperkalaemia when potassium salts given with • **TACROLIMUS**
- ▶ Ulcer-healing Drugs: avoidance of potassium citrate advised by manufacturer of **SUCRALFATE**

### Pramipexole

- ▶ Antipsychotics: manufacturer of pramipexole advises avoid concomitant use of **ANTIPSYCHOTICS** (antagonism of effect)
- ▶ Memantine: effects of dopaminergics possibly enhanced by **MEMANTINE**
- ▶ Methyl dopa: antiparkinsonian effect of dopaminergics antagonised by **METHYLDOPA**
- ▶ Ulcer-healing Drugs: excretion of pramipexole reduced by **CIMETIDINE** (increased plasma concentration)

### Prasugrel

- ▶ Analgesics: possible increased risk of bleeding when prasugrel given with **NSAIDS**
- ▶ Anticoagulants: possible increased risk of bleeding when prasugrel given with **COUMARINS** or **PHENINDIONE**
- ▶ Clopidogrel: possible increased risk of bleeding when prasugrel given with **CLOPIDOGREL**

**Praevastatin** see Statins

### Praziquantel

- Antibacterials: plasma concentration of praziquantel reduced by • **RIFAMPICIN**—avoid concomitant use
- Antiepileptics: plasma concentration of praziquantel reduced by • **CARBAMAZEPINE**, • **FOSPHENYTOIN**, • **PHENOBARBITAL**, • **PHENYTOIN** and • **PRIMIDONE**—consider increasing praziquantel dose when given for systemic infections
- ▶ Antifungals: plasma concentration of praziquantel increased by **KETOCONAZOLE**



**Praziquantel** (continued)

- Antimalarials: plasma concentration of praziquantel reduced by • **CHLOROQUINE**—consider increasing praziquantel dose when given for systemic infections
- Corticosteroids: plasma concentration of praziquantel possibly reduced by continuous use of • **DEXAMETHASONE**
- Grapefruit Juice: plasma concentration of praziquantel increased by • **GRAPEFRUIT JUICE**
- Ulcer-healing Drugs: plasma concentration of praziquantel increased by • **CIMETIDINE**

**Prazosin** see Alpha-blockers**Prednisolone** see Corticosteroids**Prednisone** see Corticosteroids**Pregabalin**

- Antidepressants: anticonvulsant effect of antiepileptics possibly antagonised by • **MAOIs** and • **TRICYCLIC-RELATED ANTIDEPRESSANTS** (convulsive threshold lowered); anticonvulsant effect of antiepileptics antagonised by • **SSRIs** and • **TRICYCLICS** (convulsive threshold lowered)
- Antimalarials: anticonvulsant effect of antiepileptics antagonised by • **MEFLOQUINE**
- Antipsychotics: anticonvulsant effect of antiepileptics antagonised by • **ANTIPSYCHOTICS** (convulsive threshold lowered)
- Orlistat: possible increased risk of convulsions when antiepileptics given with • **ORLISTAT**

**Prilocaïne**

- Anti-arrhythmics: increased myocardial depression when prilocaïne given with • **ANTI-ARRHYTHMICS**
- Antibacterials: increased risk of methaemoglobinaemia when prilocaïne given with • **SULFONAMIDES**

**Primaquine**

- Antimalarials: avoidance of antimalarials advised by manufacturer of • **ARTEMETHER WITH LUMEFANTRINE**
- Histamine: avoidance of antimalarials advised by manufacturer of • **HISTAMINE**
- Mepacrine: plasma concentration of primaquine increased by • **MEPACRINE** (increased risk of toxicity)
- Vaccines: antimalarials inactivate • **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Primidone**

- Alcohol: increased sedative effect when primidone given with • **ALCOHOL**
- Aminophylline: primidone accelerates metabolism of • **AMINOPHYLLINE** (reduced effect)
- Analgesics: primidone reduces plasma concentration of • **METHADONE**; primidone possibly accelerates metabolism of • **PARACETAMOL** (also isolated reports of hepatotoxicity)
- Anthelmintics: primidone reduces plasma concentration of • **ALBENDAZOLE** and • **PRAZIQUANTEL**—consider increasing albendazole and praziquantel dose when given for systemic infections
- Anti-arrhythmics: primidone accelerates metabolism of • **DISOPYRAMIDE** (reduced plasma concentration); primidone possibly reduces plasma concentration of • **DRONEDARONE**—avoid concomitant use; primidone possibly accelerates metabolism of • **PROPAFENONE**
- Antibacterials: primidone accelerates metabolism of • **METRONIDAZOLE** (reduced effect); primidone possibly reduces plasma concentration of • **RIFAMPICIN**; primidone accelerates metabolism of • **DOXYCYCLINE** (reduced plasma concentration); primidone possibly accelerates metabolism of • **CHLORAMPHENICOL** (reduced plasma concentration); primidone reduces plasma concentration of • **TELITHROMYCIN** (avoid during and for 2 weeks after primidone)
- Anticoagulants: primidone possibly reduces plasma concentration of • **APIXABAN**; primidone accelerates metabolism of • **COUMARINS** (reduced anticoagulant effect); primidone possibly reduces plasma concentration of • **RIVAROXABAN**—manufacturer of rivaroxaban advises monitor for signs of thrombosis
- Antidepressants: primidone possibly reduces plasma concentration of • **REBOXETINE**; primidone reduces plasma concentration of • **PAROXETINE**; primidone accelerates metabolism of • **MIANSERIN** (reduced plasma concentration);
- Antidepressants (continued)
  - anticonvulsant effect of antiepileptics possibly antagonised by • **MAOIs** and • **TRICYCLIC-RELATED ANTIDEPRESSANTS** (convulsive threshold lowered); anticonvulsant effect of antiepileptics antagonised by • **SSRIs** and • **TRICYCLICS** (convulsive threshold lowered); plasma concentration of primidone possibly reduced by • **ST JOHN'S WORT**—avoid concomitant use; primidone possibly accelerates metabolism of • **TRICYCLICS** (reduced plasma concentration)
- Antiepileptics: plasma concentration of primidone possibly increased by • **CARBAMAZEPINE**; primidone possibly reduces plasma concentration of • **ETHOSUXIMIDE**, • **RUFINAMIDE** and • **TOPIRAMATE**; plasma concentration of primidone often increased by • **FOSPHENYTOIN** and • **PHENYTOIN**, plasma concentration of fosphenytoin and phenytoin often reduced but may be increased; primidone reduces plasma concentration of • **LAMOTRIGINE**, • **TIAGABINE** and • **ZONISAMIDE**; plasma concentration of primidone increased by • **OXCARBAZEPINE**, also plasma concentration of an active metabolite of oxcarbazepine reduced; plasma concentration of primidone increased by • **SODIUM VALPROATE** and • **VALPROIC ACID** (also plasma concentration of sodium valproate and valproic acid reduced); plasma concentration of primidone increased by • **STIRIPENTOL**
- Antifungals: primidone possibly reduces plasma concentration of • **ITRACONAZOLE** and • **POSACONAZOLE**; primidone possibly reduces plasma concentration of • **VORICONAZOLE**—avoid concomitant use; primidone reduces absorption of • **GRISEOFULVIN** (reduced effect)
- Antimalarials: avoidance of primidone advised by manufacturer of • **ARTENIMOL WITH PIPERAQUINE**; anticonvulsant effect of antiepileptics antagonised by • **MEFLOQUINE**
- Antipsychotics: anticonvulsant effect of antiepileptics antagonised by • **ANTIPSYCHOTICS** (convulsive threshold lowered); primidone accelerates metabolism of • **HALOPERIDOL** (reduced plasma concentration); plasma concentration of both drugs reduced when primidone given with • **CHLORPROMAZINE**; primidone possibly reduces plasma concentration of • **ARIPIPRAZOLE** (avoid concomitant use or consider increasing the dose of aripiprazole—consult aripiprazole product literature); primidone possibly reduces plasma concentration of • **CLOZAPINE**; primidone possibly reduces plasma concentration of • **LURASIDONE**—avoid concomitant use
- Antivirals: primidone possibly reduces plasma concentration of • **ABACAVIR**, • **DARUNAVIR**, • **FOSAMPRENAVIR**, • **INDINAVIR**, • **LOPINAVIR** and • **SAQUINAVIR**; avoidance of primidone advised by manufacturer of • **BOCEPREVIR** and • **RILPIVIRINE** (plasma concentration of boceprevir and rilpivirine possibly reduced); primidone possibly reduces plasma concentration of • **DACLATASVIR** and • **SIMEPREVIR**—manufacturer of daclatasvir and simeprevir advises avoid concomitant use; avoidance of primidone advised by manufacturer of • **DOLUTEGRAVIR**, • **ELVITEGRAVIR**, • **ETRAVIRINE**, • **SOFOSBUVIR** and • **TELAPREVIR**
- Anxiolytics and Hypnotics: increased sedative effect when primidone given with • **ANXIOLYTICS AND HYPNOTICS**; primidone often reduces plasma concentration of • **CLONAZEPAM**
- Aprepitant: primidone possibly reduces plasma concentration of • **APREPITANT**
- Avanafil: primidone possibly reduces plasma concentration of • **AVANAFIL**—manufacturer of avanafil advises avoid concomitant use
- Beta-blockers: primidone possibly reduces plasma concentration of • **PROPRANOLOL**
- Caffeine citrate: effects of primidone possibly antagonised by • **CAFFEINE CITRATE**
- Calcium-channel Blockers: primidone probably reduces effects of • **CALCIUM-CHANNEL BLOCKERS**; avoidance of primidone advised by manufacturer of • **ISRADIPINE**; avoidance of primidone advised by manufacturer of • **NIMODIPINE** (plasma concentration of nimodipine reduced)
- Cannabis Extract: primidone possibly reduces plasma concentration of • **CANNABIS EXTRACT**—manufacturer of cannabis extract advises avoid concomitant use

**Primidone** (continued)

- Cyclosporin: primidone accelerates metabolism of
  - **CYCLOSPORIN** (reduced plasma concentration)
- Cobicistat: primidone possibly reduces plasma concentration of ● **COBICISTAT**—manufacturer of cobicistat advises avoid concomitant use
- Corticosteroids: primidone accelerates metabolism of
  - **CORTICOSTEROIDS** (reduced effect)
- Cytotoxics: primidone possibly decreases plasma concentration of **AXITINIB** (increase dose of axitinib—consult axitinib product literature); primidone possibly reduces plasma concentration of **BORTEZOMIB**, ● **BOSUTINIB**, **CRIZOTINIB** and **PONATINIB**—manufacturer of bortezomib, bosutinib, crizotinib and ponatinib advises avoid concomitant use; primidone possibly reduces plasma concentration of
  - **CABOZANTINIB**—avoid concomitant use; avoidance of primidone advised by manufacturer of ● **CABAZITAXEL**, **DABRAFENIB** and **GEFITINIB**; avoidance of primidone advised by manufacturer of **DASATINIB** and **VANDETANIB** (plasma concentration of dasatinib and vandetanib possibly reduced); primidone possibly reduces plasma concentration of **ETOPOSIDE**; primidone reduces plasma concentration of **IRINOTECAN** and its active metabolite; manufacturer of procarbazine advises possible increased risk of hypersensitivity reactions when primidone given with **PROCABAZINE**
- Diuretics: primidone reduces plasma concentration of
  - **EPLERENONE**—avoid concomitant use; increased risk of osteomalacia when primidone given with **CARBONIC ANHYDRASE INHIBITORS**
- ▶ Folate: plasma concentration of primidone possibly reduced by **FOLATES**
- ▶ Fosaprepitant: primidone possibly reduces plasma concentration of **FOSAPREPITANT**
- Hormone Antagonists: primidone possibly reduces plasma concentration of ● **ABIRATERONE**—manufacturer of abiraterone advises avoid concomitant use; primidone accelerates metabolism of **TOREMIFENE** (reduced plasma concentration)
- Ivacaftor: primidone possibly reduces plasma concentration of
  - **IVACFTOR**—manufacturer of ivacaftor advises avoid concomitant use
- ▶ Leukotriene Receptor Antagonists: primidone reduces plasma concentration of **MONTelukAST**
- Oestrogens: primidone accelerates metabolism of
  - **OESTROGENS** (reduced contraceptive effect with combined oral contraceptives, contraceptive patches, and vaginal rings—see Contraceptive Interactions in BNF)
- Orlistat: possible increased risk of convulsions when antiepileptics given with ● **ORLISTAT**
- Progestogens: primidone accelerates metabolism of
  - **PROGESTOGENS** (reduced contraceptive effect with combined oral contraceptives, progestogen-only oral contraceptives, contraceptive patches, vaginal rings, etonogestrel-releasing implant, and emergency hormonal contraception—see Contraceptive Interactions in BNF)
- ▶ Roflumilast: primidone possibly inhibits effects of **ROFLUMILAST** (manufacturer of roflumilast advises avoid concomitant use)
- ▶ Sodium Oxybate: avoidance of primidone advised by manufacturer of **SODIUM OXYBATE**
- ▶ Sympathomimetics: plasma concentration of primidone possibly increased by **METHYLPHENIDATE**
- Tacrolimus: primidone reduces plasma concentration of
  - **TACROLIMUS**
- Theophylline: primidone accelerates metabolism of
  - **THEOPHYLLINE** (reduced effect)
- ▶ Thyroid Hormones: primidone accelerates metabolism of **THYROID HORMONES** (may increase requirements for thyroid hormones in hypothyroidism)
- ▶ Ticagrelor: primidone possibly reduces plasma concentration of **TICAGRELOR**
- Ulipristal: avoidance of primidone advised by manufacturer of
  - **ULIPRISTAL** (contraceptive effect of ulipristal possibly reduced)

**Primidone** (continued)

- ▶ Vitamins: primidone possibly increases requirements for **ALFACALCIDOL**, **CALCITRIOL**, **COLECALCIFEROL**, **DIHYDROTACHYSTEROL**, **ERGOCALCIFEROL**, **PARICALCITOL** or **VITAMIN D**
- Procabazine**
- ▶ Alcohol: disulfiram-like reaction when procabazine given with **ALCOHOL**
  - ▶ Antiepileptics: manufacturer of procabazine advises possible increased risk of hypersensitivity reactions when given with **CARBAMAZEPINE**, **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**
  - Antipsychotics: avoid concomitant use of cytotoxics with
    - **CLOZAPINE** (increased risk of agranulocytosis)
  - ▶ Cardiac Glycosides: procabazine possibly reduces absorption of **DIGOXIN** tablets
- Prochlorperazine** see Antipsychotics
- Procydiline** see Antimuscarinics
- Progesterone** see Progestogens
- Progestogens**
- Antibacterials: plasma concentration of dienogest increased by **ERYTHROMYCIN**; metabolism of progestogens accelerated by
    - **RIFAMYCINS** (reduced contraceptive effect with combined oral contraceptives, progestogen-only oral contraceptives, contraceptive patches, vaginal rings, etonogestrel-releasing implant, and emergency hormonal contraception—see Contraceptive Interactions in BNF)
  - Anticoagulants: progestogens may enhance or reduce anticoagulant effect of **COUMARINS**; progestogens antagonise anticoagulant effect of ● **PHENINDIONE**
  - Antidepressants: contraceptive effect of progestogens reduced by ● **ST JOHN'S WORT** (avoid concomitant use)
  - ▶ Antidiabetics: progestogens antagonise hypoglycaemic effect of **ANTIDIABETICS**
  - Antiepileptics: metabolism of progestogens accelerated by
    - **CARBAMAZEPINE**, ● **ESICARBAMAZEPINE**, ● **FOSPHENYTOIN**, ● **OXCARBAZEPINE**, ● **PERAMPANEL**, ● **PHENOBARBITAL**, ● **PHENYTOIN**, ● **PRIMIDONE**, ● **RUFINAMIDE** and ● **TOPIRAMATE** (reduced contraceptive effect with combined oral contraceptives, progestogen-only oral contraceptives, contraceptive patches, vaginal rings, etonogestrel-releasing implant, and emergency hormonal contraception—see Contraceptive Interactions in BNF); desogestrel possibly increases plasma concentration of **LAMOTRIGINE**
  - ▶ Antifungals: progestogens possibly increase plasma concentration of **VORICONAZOLE**; anecdotal reports of contraceptive failure and menstrual irregularities when progestogens given with **GRISOFULVIN**; occasional reports of breakthrough bleeding when progestogens (used for contraception) given with **TERBINAFINE**
  - Antivirals: plasma concentration of norethisterone increased by **AZANAVIR**; plasma concentration of drosiprenone increased by **BOCEPREVIR** (increased risk of toxicity); contraceptive effect of progestogens possibly reduced by
    - **EFAVIRENZ**; plasma concentration of norgestimate increased by **ELVITEGRAVIR**; metabolism of progestogens accelerated by ● **NEVIRAPINE** (reduced contraceptive effect with combined oral contraceptives, progestogen-only oral contraceptives, contraceptive patches, vaginal rings, etonogestrel-releasing implant, and emergency hormonal contraception—see Contraceptive Interactions in BNF)
  - ▶ Anxiolytics and Hypnotics: progestogens possibly increase plasma concentration of **CHLORDIAZEPOXIDE**, **DIAZEPAM** and **NITRAZEPAM**; progestogens possibly reduce plasma concentration of **LORAZEPAM**, **OXAZEPAM** and **TEMAZEPAM**
  - Aprepitant: possible contraceptive failure of hormonal contraceptives containing progestogens when given with
    - **APREPITANT** (alternative contraception recommended)
  - Bosentan: possible contraceptive failure of hormonal contraceptives containing progestogens when given with
    - **BOSENTAN** (alternative contraception recommended)
  - ▶ Ciclosporin: progestogens possibly increase plasma concentration of **CYCLOSPORIN**
  - ▶ Cobicistat: plasma concentration of norgestimate increased by **COBICISTAT**

**Progestogens** (continued)

- Cytotoxics: possible reduction in contraceptive effect of progestogens advised by manufacturer of • **CRIZOTINIB** and • **VEMLAFENIB**; possible reduced contraceptive effect of hormonal contraceptives containing progestogens advised by manufacturer of • **DABRAFENIB** (alternative contraception recommended)
- Diuretics: risk of hyperkalaemia when drospirenone given with **POTASSIUM-SPARING DIURETICS** and **ALDOSTERONE ANTAGONISTS** (monitor serum potassium during first cycle)
- Dopaminergics: progestogens increase plasma concentration of • **SELEGILINE**—manufacturer of selegiline advises avoid concomitant use
- Fosaprepitant: possible contraceptive failure of hormonal contraceptives containing progestogens when given with • **FOSAPREPITANT** (alternative contraception recommended)
- Lipid-regulating Drugs: plasma concentration of norethisterone increased by **ATORVASTATIN**; plasma concentration of active metabolite of norgestimate increased by **ROSUVASTATIN**; plasma concentration of norgestrel increased by **ROSUVASTATIN**
- Muscle Relaxants: progestogens possibly increase plasma concentration of **TIZANIDINE** (increased risk of toxicity)
- Sugammadex: plasma concentration of progestogens possibly reduced by **SUGAMMADEX**—manufacturer of sugammadex advises additional contraceptive precautions
- Teriflunomide: plasma concentration of levonorgestrel increased by **TERIFLUNOMIDE**
- Ulipristal: contraceptive effect of progestogens possibly reduced by • **ULIPRISTAL**

**Proguanil**

- Antacids: absorption of proguanil reduced by **ORAL MAGNESIUM SALTS** (as magnesium trisilicate)
- Anticoagulants: isolated reports that proguanil may enhance anticoagulant effect of **WARFARIN**
- Antimalarials: avoidance of antimalarials advised by manufacturer of • **ARTEMETHER WITH LUMEFANTRINE**; increased antifolate effect when proguanil given with **PYRIMETHAMINE**
- Antivirals: plasma concentration of proguanil possibly affected by **EFAVIRENZ**
- Histamine: avoidance of antimalarials advised by manufacturer of **HISTAMINE**
- Vaccines: antimalarials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Promazine** see Antipsychotics

**Promethazine** see Antihistamines

**Propafenone**

- Aminophylline: propafenone increases plasma concentration of **AMINOPHYLLINE**
- Anaesthetics, Local: increased myocardial depression when anti-arrhythmics given with **BUPIVACAINE**, **LEVOBUPIVACAINE**, **PRILOCAINE** or **ROPIVACAINE**
- Anti-arrhythmics: increased myocardial depression when anti-arrhythmics given with other • **ANTI-ARRHYTHMICS**
- Antibacterials: metabolism of propafenone accelerated by • **RIFAMPICIN** (reduced effect)
- Anticoagulants: propafenone enhances anticoagulant effect of • **COUMARINS**
- Antidepressants: metabolism of propafenone possibly inhibited by **FLUOXETINE** and **PAROXETINE**; increased risk of arrhythmias when propafenone given with • **TRICYCLICS**
- Antiepileptics: metabolism of propafenone possibly accelerated by **PHENOBARBITAL** and **PRIMIDONE**
- Antihistamines: avoidance of propafenone advised by manufacturer of **MIZOLASTINE** (possible risk of ventricular arrhythmias)
- Antipsychotics: increased risk of ventricular arrhythmias when anti-arrhythmics that prolong the QT interval given with • **ANTI-PSYCHOTICS** that prolong the QT interval
- Antivirals: plasma concentration of propafenone possibly increased by • **FOSAMPRENAVIR** (increased risk of ventricular arrhythmias—avoid concomitant use); plasma concentration of propafenone increased by • **RITONAVIR** (increased risk of ventricular arrhythmias—avoid concomitant use); increased risk of ventricular arrhythmias when propafenone given with • **SAQUINAVIR**—avoid concomitant use; caution with

**Propafenone**

- Antivirals (continued)  
propafenone advised by manufacturer of • **TELAPREVIR** (risk of ventricular arrhythmias)
- Beta-blockers: increased myocardial depression when anti-arrhythmics given with • **BETA-BLOCKERS**; propafenone increases plasma concentration of **METOPROLOL** and **PROPRANOLOL**
- Cardiac Glycosides: propafenone increases plasma concentration of • **DIGOXIN** (halve dose of digoxin)
- Ciclosporin: propafenone possibly increases plasma concentration of **CICLOSPORIN**
- Parasympathomimetics: propafenone possibly antagonises effects of **NEOSTIGMINE** and **PYRIDOSTIGMINE**
- Theophylline: propafenone increases plasma concentration of **THEOPHYLLINE**
- Ulcer-healing Drugs: plasma concentration of propafenone increased by • **CIMETIDINE**

**Propantheline** see Antimuscarinics

**Propiverine** see Antimuscarinics

**Propofol** see Anaesthetics, General

**Propranolol** see Beta-blockers

**Prostaglandins**

- ACE Inhibitors: enhanced hypotensive effect when alprostadil given with **ACE INHIBITORS**
- Adrenergic Neurone Blockers: enhanced hypotensive effect when alprostadil given with **ADRENERGIC NEURONE BLOCKERS**
- Alpha-blockers: enhanced hypotensive effect when alprostadil given with **ALPHA-BLOCKERS**
- Angiotensin-II Receptor Antagonists: enhanced hypotensive effect when alprostadil given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- Beta-blockers: enhanced hypotensive effect when alprostadil given with **BETA-BLOCKERS**
- Calcium-channel Blockers: enhanced hypotensive effect when alprostadil given with **CALCIUM-CHANNEL BLOCKERS**
- Clonidine: enhanced hypotensive effect when alprostadil given with **CLONIDINE**
- Diazoxide: enhanced hypotensive effect when alprostadil given with **DIAZOXIDE**
- Diuretics: enhanced hypotensive effect when alprostadil given with **DIURETICS**
- Methyldopa: enhanced hypotensive effect when alprostadil given with **METHYLDOPA**
- Moxonidine: enhanced hypotensive effect when alprostadil given with **MOXONIDINE**
- Nitrates: enhanced hypotensive effect when alprostadil given with **NITRATES**
- Oxytocin: prostaglandins potentiate uterotonic effect of **OXYTOCIN**
- Vasodilator Antihypertensives: enhanced hypotensive effect when alprostadil given with **HYDRALAZINE**, **MINOXIDIL** or **SODIUM NITROPRUSSIDE**

**Protein Kinase Inhibitors** see individual drugs

**Proton Pump Inhibitors**

- Antacids: absorption of lansoprazole possibly reduced by **ANTACIDS**
- Antibacterials: plasma concentration of both drugs increased when omeprazole given with **CLARITHROMYCIN**
- Anticoagulants: pantoprazole might enhance the anticoagulant effect of **COUMARINS**; esomeprazole and omeprazole possibly enhance anticoagulant effect of • **COUMARINS**
- Antidepressants: omeprazole increases plasma concentration of **ESCITALOPRAM**; plasma concentration of lansoprazole possibly increased by **FLUVOXAMINE**; plasma concentration of omeprazole possibly reduced by **ST JOHN'S WORT**
- Antiepileptics: omeprazole possibly enhances effects of **FOSPHENYTOIN** and **PHENYTOIN**; esomeprazole enhances effects of • **FOSPHENYTOIN** and • **PHENYTOIN**
- Antifungals: proton pump inhibitors reduce absorption of **ITRACONAZOLE** and **KETOCONAZOLE**; esomeprazole reduces plasma concentration of • **POSACONAZOLE**—manufacturer of posaconazole *suspension* advises avoid concomitant use; lansoprazole, omeprazole, pantoprazole and rabeprazole

**Proton Pump Inhibitors**

- Antifungals (continued)
  - possibly reduce plasma concentration of ● **POSACONAZOLE**—manufacturer of posaconazole *suspension* advises avoid concomitant use; plasma concentration of esomeprazole possibly increased by **VORICONAZOLE**; plasma concentration of omeprazole increased by **VORICONAZOLE** (consider reducing dose of omeprazole)
- ▶ Antipsychotics: omeprazole possibly reduces plasma concentration of **CLOZAPINE**
- Antivirals: proton pump inhibitors reduce plasma concentration of ● **ATAZANAVIR**—avoid or adjust dose of both drugs (consult product literature); omeprazole increases plasma concentration of **RALTEGRAVIR**; avoidance of esomeprazole, lansoprazole, pantoprazole and rabeprazole advised by manufacturer of **RILPIVIRINE** (plasma concentration of rilpivirine possibly reduced); omeprazole reduces plasma concentration of ● **RILPIVIRINE**—avoid concomitant use; esomeprazole, lansoprazole, pantoprazole and rabeprazole possibly increase plasma concentration of ● **SAQUINAVIR**—manufacturer of saquinavir advises avoid concomitant use; omeprazole increases plasma concentration of ● **SAQUINAVIR**—manufacturer of saquinavir advises avoid concomitant use; plasma concentration of esomeprazole and omeprazole reduced by ● **TIPRANAVIR**
- ▶ Anxiolytics and Hypnotics: esomeprazole and omeprazole possibly inhibit metabolism of **DIAZEPAM** (increased plasma concentration)
- ▶ Cardiac Glycosides: proton pump inhibitors possibly slightly increase plasma concentration of **DIGOXIN**
- ▶ Ciclosporin: omeprazole possibly affects plasma concentration of **CICLOSPORIN**
- Clotazol: omeprazole increases plasma concentration of ● **CLOSTAZOL** (see under Clotazol, p. 206)
- Clopidogrel: esomeprazole and omeprazole reduce antiplatelet effect of ● **CLOPIDOGREL**; lansoprazole, pantoprazole and rabeprazole possibly reduce antiplatelet effect of **CLOPIDOGREL**
- Cytotoxics: proton pump inhibitors possibly reduce excretion of **METHOTREXATE** (increased risk of toxicity); lansoprazole reduces plasma concentration of **BOSUTINIB**; avoidance of proton pump inhibitors advised by manufacturer of **DABRAFENIB** (plasma concentration of dabrafenib possibly reduced); avoidance of esomeprazole, lansoprazole, pantoprazole and rabeprazole advised by manufacturer of ● **ERLOTINIB**; omeprazole reduces plasma concentration of ● **ERLOTINIB**—manufacturer of erlotinib advises avoid concomitant use; proton pump inhibitors possibly reduce absorption of **LAPATINIB**; proton pump inhibitors possibly reduce absorption of **PAZOPANIB**—manufacturer of pazopanib advises give at the same time as proton pump inhibitors
- ▶ Tacrolimus: omeprazole possibly increases plasma concentration of **TACROLIMUS**
- ▶ Ulcer-healing Drugs: absorption of lansoprazole possibly reduced by **SUCRALFATE**

**Pseudoephedrine** see Sympathomimetics

**Pyrazinamide**

- ▶ Sulfonpyrazole: pyrazinamide antagonises effects of **SULFINPYRAZONE**
- ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Pyridostigmine** see Parasympathomimetics

**Pyridoxine** see Vitamins

**Pyrimethamine**

- Antibacterials: increased antifolate effect when pyrimethamine given with ● **SULFONAMIDES** or ● **TRIMETHOPRIM**
- Antiepileptics: pyrimethamine antagonises anticonvulsant effect of ● **FOSPHENYTOIN** and ● **PHENYTOIN**, also increased antifolate effect
- Antimalarials: avoidance of antimalarials advised by manufacturer of ● **ARTEMETHER WITH LUMEFANTRINE**; increased antifolate effect when pyrimethamine given with **PROGUANIL**
- ▶ Antivirals: increased antifolate effect when pyrimethamine given with **ZIDOVUDINE**

**Pyrimethamine** (continued)

- Cytotoxics: pyrimethamine increases antifolate effect of ● **METHOTREXATE** and ● **PEMETREXED**
- ▶ Histamine: avoidance of antimalarials advised by manufacturer of **HISTAMINE**
- ▶ Vaccines: antimalarials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Quetiapine** see Antipsychotics

**Quinagolid**

- ▶ Memantine: effects of dopaminergics possibly enhanced by **MEMANTINE**
- ▶ Methylidopa: antiparkinsonian effect of dopaminergics antagonised by **METHYLDOPA**

**Quinapril** see ACE Inhibitors

**Quinine**

- Anti-arrhythmics: increased risk of ventricular arrhythmias when quinine given with ● **AMIODARONE**—avoid concomitant use; quinine increases plasma concentration of ● **FLECAINIDE**
- Antibacterials: increased risk of ventricular arrhythmias when quinine given with ● **MOXIFLOXACIN**—avoid concomitant use; plasma concentration of quinine reduced by ● **RIFAMPICIN**
- ▶ Anticoagulants: plasma concentration of both drugs increased when quinine given with **WARFARIN**
- Antidepressants: possible increased risk of ventricular arrhythmias when quinine given with ● **CITALOPRAM** or ● **ESCITALOPRAM**—avoid concomitant use
- Antimalarials: avoidance of antimalarials advised by manufacturer of ● **ARTEMETHER WITH LUMEFANTRINE**; increased risk of ventricular arrhythmias when quinine given with ● **ARTEMETHER WITH LUMEFANTRINE**; increased risk of convulsions when quinine given with ● **MEFLOQUINE** (but should not prevent the use of *intravenous* quinine in severe cases)
- Antipsychotics: increased risk of ventricular arrhythmias when quinine given with ● **DROPERIDOL** or ● **PIMOZIDE**—avoid concomitant use; possible increased risk of ventricular arrhythmias when quinine given with ● **HALOPERIDOL**—avoid concomitant use; possible increased risk of ventricular arrhythmias when quinine given with ● **RISPERIDONE**
- Antivirals: plasma concentration of quinine possibly increased by ● **ATAZANAVIR**, ● **DARUNAVIR**, ● **FOSAMPRENAVIR**, ● **INDINAVIR** and ● **TIPRANAVIR** (increased risk of toxicity); plasma concentration of quinine increased by ● **RITONAVIR** (increased risk of toxicity); increased risk of ventricular arrhythmias when quinine given with ● **SAQUINAVIR**—avoid concomitant use
- Cardiac Glycosides: quinine increases plasma concentration of ● **DIGOXIN**
- ▶ Dopaminergics: quinine possibly increases plasma concentration of **AMANTADINE**
- ▶ Histamine: avoidance of antimalarials advised by manufacturer of **HISTAMINE**
- ▶ Muscle Relaxants: quinine possibly enhances effects of **SUXAMETHONIUM**
- ▶ Ulcer-healing Drugs: metabolism of quinine inhibited by **CIMETIDINE** (increased plasma concentration)
- ▶ Vaccines: antimalarials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Quinolones**

- Aminophylline: possible increased risk of convulsions when quinolones given with ● **AMINOPHYLLINE**; ciprofloxacin and norfloxacin increase plasma concentration of ● **AMINOPHYLLINE**
- Analgesics: possible increased risk of convulsions when quinolones given with ● **NSAIDS**
- ▶ Antacids: absorption of ciprofloxacin, levofloxacin, moxifloxacin, norfloxacin and ofloxacin reduced by **ANTACIDS**
- Anti-arrhythmics: increased risk of ventricular arrhythmias when levofloxacin or moxifloxacin given with ● **AMIODARONE**—avoid concomitant use; increased risk of ventricular arrhythmias when moxifloxacin given with ● **DISOPYRAMIDE**—avoid concomitant use
- Antibacterials: increased risk of ventricular arrhythmias when moxifloxacin given with *parenteral* ● **ERYTHROMYCIN**—avoid concomitant use; ciprofloxacin possibly increases plasma



**Quinolones**

- **Antibacterials** (continued)
  - concentration of **BEDAQUILINE**—avoid concomitant use if ciprofloxacin given for more than 14 days; avoidance of moxifloxacin advised by manufacturer of **BEDAQUILINE**; increased risk of ventricular arrhythmias when moxifloxacin given with • **DELAMANID**; effects of nalidixic acid possibly antagonised by **NITROFURANTOIN**; possible increased risk of ventricular arrhythmias when moxifloxacin given with • **TELITHROMYCIN**
- **Anticoagulants**: nalidixic acid, norfloxacin and ofloxacin enhance anticoagulant effect of • **COUMARINS**; ciprofloxacin and levofloxacin possibly enhance anticoagulant effect of **COUMARINS**; levofloxacin possibly enhances anticoagulant effect of **PHENINDIONE**
- **Antidepressants**: avoidance of moxifloxacin advised by manufacturer of • **CITALOPRAM** and • **ESCITALOPRAM** (risk of ventricular arrhythmias); ciprofloxacin inhibits metabolism of • **DULOXETINE**—avoid concomitant use; avoidance of ciprofloxacin advised by manufacturer of • **AGOMELATINE**; increased risk of ventricular arrhythmias when moxifloxacin given with • **TRICYCLICS**—avoid concomitant use
- **Antidiabetics**: norfloxacin possibly enhances effects of **GLIBENCLAMIDE**
- **Antiepileptics**: ciprofloxacin increases or decreases plasma concentration of **FOSPHENYTOIN** and **PHENYTOIN**
- **Antihistamines**: increased risk of ventricular arrhythmias when moxifloxacin given with • **MIZOLASTINE**—avoid concomitant use
- **Antimalarials**: avoidance of quinolones advised by manufacturer of • **ARTEMETHER WITH LUMEFANTRINE**; avoidance of moxifloxacin advised by manufacturer of • **ARTENIMOL WITH PIPERAQUINE** (possible risk of ventricular arrhythmias); increased risk of ventricular arrhythmias when moxifloxacin given with • **CHLOROQUINE**, • **HYDROXYCHLOROQUINE**, • **MEFLOQUINE** or • **QUININE**—avoid concomitant use
- **Antipsychotics**: increased risk of ventricular arrhythmias when moxifloxacin given with • **BENPERIDOL**—manufacturer of benperidol advises avoid concomitant use; increased risk of ventricular arrhythmias when moxifloxacin given with • **DROPERIDOL**, • **HALOPERIDOL**, • **PHENOTHIAZINES**, • **PIMOZIDE** or • **ZUCLOPENTHIXOL**—avoid concomitant use; ciprofloxacin increases plasma concentration of **CLOZAPINE**; ciprofloxacin possibly increases plasma concentration of **OLANZAPINE**
- **Antivirals**: manufacturer of norfloxacin advises give **DIDANOSINE** at least 2 hours before or after norfloxacin; increased risk of ventricular arrhythmias when moxifloxacin given with • **SAQUINAVIR**—avoid concomitant use
- **Anxiolytics and Hypnotics**: avoidance of ciprofloxacin advised by manufacturer of **ZOLPIDEM**
- **Atomoxetine**: increased risk of ventricular arrhythmias when moxifloxacin given with • **ATOMOXETINE**
- **Beta-blockers**: increased risk of ventricular arrhythmias when moxifloxacin given with • **SOTALOL**—avoid concomitant use
- **Calcium Salts**: absorption of ciprofloxacin reduced by **CALCIUM SALTS**
- **Ciclosporin**: increased risk of nephrotoxicity when quinolones given with • **CICLOSPORIN**
- **Clopidogrel**: ciprofloxacin possibly reduces antiplatelet effect of • **CLOPIDOGREL**
- **Cytotoxics**: nalidixic acid increases risk of **MELPHALAN** toxicity; ciprofloxacin possibly reduces excretion of **METHOTREXATE** (increased risk of toxicity); possible increased risk of ventricular arrhythmias when moxifloxacin given with • **BOSUTINIB**; ciprofloxacin possibly increases the plasma concentration of • **BOSUTINIB**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib; ciprofloxacin increases plasma concentration of **ERLOTINIB**; ciprofloxacin possibly increases the plasma concentration of • **IBRUTINIB**—reduce dose of ibrutinib (see under Ibrutinib, p. 809); possible increased risk of ventricular arrhythmias when moxifloxacin given with • **VADETANIB**—avoid concomitant use; increased risk of ventricular arrhythmias when levofloxacin or moxifloxacin given with • **ARSENIC TRIOXIDE**

**Quinolones** (continued)

- **Dairy Products**: absorption of ciprofloxacin and norfloxacin reduced by **DAIRY PRODUCTS**
- **Dopaminergics**: ciprofloxacin increases plasma concentration of **RASAGILINE**; ciprofloxacin inhibits metabolism of **ROPINIROLE** (increased plasma concentration)
- **5HT<sub>2</sub>-receptor Agonists**: quinolones possibly inhibit metabolism of **ZOLMITRIPTAN** (reduce dose of zolmitriptan)
- **Iron Salts**: absorption of ciprofloxacin, levofloxacin, moxifloxacin and ofloxacin reduced by **oral IRON SALTS**; absorption of norfloxacin reduced by **oral IRON SALTS** (give at least 2 hours apart)
- **Lanthanum**: absorption of quinolones possibly reduced by **LANTHANUM** (give at least 2 hours before or 4 hours after lanthanum)
- **Muscle Relaxants**: ciprofloxacin increases plasma concentration of • **TIZANIDINE** (increased risk of toxicity)—avoid concomitant use; norfloxacin possibly increases plasma concentration of **TIZANIDINE** (increased risk of toxicity)
- **Mycophenolate**: norfloxacin possibly reduces bioavailability of **MYCOPHENOLATE**
- **Pentamidine Isetionate**: increased risk of ventricular arrhythmias when moxifloxacin given with • **PENTAMIDINE ISETIONATE**—avoid concomitant use
- **Pirfenidone**: ciprofloxacin increases plasma concentration of • **PIRFENIDONE**—see under Pirfenidone, p. 260
- **Sevelamer**: bioavailability of ciprofloxacin reduced by **SEVELAMER**
- **Strontium Ranelate**: absorption of quinolones reduced by **STRONTIUM RANELATE** (manufacturer of strontium ranelate advises avoid concomitant use)
- **Theophylline**: possible increased risk of convulsions when quinolones given with • **THEOPHYLLINE**; ciprofloxacin and norfloxacin increase plasma concentration of • **THEOPHYLLINE**
- **Ulcer-healing Drugs**: absorption of ciprofloxacin, levofloxacin, moxifloxacin and ofloxacin reduced by **SUCRALFATE**; absorption of norfloxacin reduced by **SUCRALFATE** (give at least 2 hours apart)
- **Vaccines**: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF
- **Zinc**: absorption of ciprofloxacin, levofloxacin, moxifloxacin and ofloxacin reduced by **ZINC**; absorption of norfloxacin reduced by **ZINC** (give at least 2 hours apart)

**Rabeprazole** see Proton Pump Inhibitors**Rabies Vaccine** see Vaccines**Raloxifene**

- **Anticoagulants**: raloxifene antagonises anticoagulant effect of **COUMARINS**
- **Lipid-regulating Drugs**: absorption of raloxifene reduced by **COLESTYRAMINE** (manufacturer of raloxifene advises avoid concomitant administration)

**Raltegravir**

- **Antacids**: plasma concentration of raltegravir reduced by **ALUMINIUM HYDROXIDE** and **ORAL MAGNESIUM SALTS**—manufacturer of raltegravir advises avoid concomitant use
- **Antibacterials**: plasma concentration of raltegravir reduced by • **RIFAMPICIN**—consider increasing dose of raltegravir
- **Antivirals**: increased risk of rash when raltegravir given with **DARUNAVIR**; avoidance of raltegravir advised by manufacturer of • **FOSAMPRENAVIR**
- **Orlistat**: absorption of raltegravir possibly reduced by • **ORLISTAT**
- **Ulcer-healing Drugs**: plasma concentration of raltegravir increased by **FAMOTIDINE** and **OMEPRAZOLE**

**Raltitrexed**

- **Antipsychotics**: avoid concomitant use of cytotoxics with • **CLOZAPINE** (increased risk of agranulocytosis)
- **Folates**: manufacturer of raltitrexed advises avoid concomitant use with • **FOLATES**

**Ramipril** see ACE Inhibitors**Ranitidine** see Histamine H<sub>2</sub>-antagonists**Ranolazine**

- **Anti-arrhythmics**: manufacturer of ranolazine advises avoid concomitant use with • **DISOPYRAMIDE**

**Ranolazine** (continued)

- Antibacterials: plasma concentration of ranolazine possibly increased by • **CLARITHROMYCIN** and • **TELITHROMYCIN**—manufacturer of ranolazine advises avoid concomitant use; plasma concentration of ranolazine reduced by • **RIFAMPICIN**—manufacturer of ranolazine advises avoid concomitant use
- ▶ Antidepressants: plasma concentration of ranolazine increased by • **PAROXETINE**
- Antifungals: plasma concentration of ranolazine increased by • **KETOCONAZOLE**—avoid concomitant use; plasma concentration of ranolazine possibly increased by • **ITRACONAZOLE**, • **POSACONAZOLE** and • **VORICONAZOLE**—manufacturer of ranolazine advises avoid concomitant use
- Antivirals: plasma concentration of ranolazine possibly increased by • **ATAZANAVIR**, • **DARUNAVIR**, • **FOSAMPRENAVIR**, • **INDINAVIR**, • **LOPINAVIR**, • **RITONAVIR**, • **SAQUINAVIR** and • **TIPRANAVIR**—manufacturer of ranolazine advises avoid concomitant use
- Beta-blockers: manufacturer of ranolazine advises avoid concomitant use with • **SOTALOL**
- ▶ Calcium-channel Blockers: plasma concentration of ranolazine increased by **DILTIAZEM** and **VERAPAMIL** (consider reducing dose of ranolazine)
- ▶ Cardiac Glycosides: ranolazine increases plasma concentration of **DIGOXIN**
- ▶ Ciclosporin: plasma concentration of both drugs may increase when ranolazine given with **CICLOSPORIN**
- Grapefruit Juice: plasma concentration of ranolazine possibly increased by • **GRAPEFRUIT JUICE**—manufacturer of ranolazine advises avoid concomitant use
- Lipid-regulating Drugs: ranolazine increases plasma concentration of • **SIMVASTATIN** (see under Simvastatin, p. 181); separating administration from ranolazine by 12 hours advised by manufacturer of **LOMITAPIDE**
- Tacrolimus: ranolazine increases plasma concentration of • **TACROLIMUS**

**Rasagiline**

**NOTE** Rasagiline is a MAO-B inhibitor

- Analgesics: avoid concomitant use of rasagiline with • **DEXTROMETHORPHAN**; risk of CNS toxicity when rasagiline given with • **PETHIDINE** (avoid pethidine for 2 weeks after rasagiline)
- ▶ Antibacterials: plasma concentration of rasagiline increased by **CIPROFLOXACIN**
- Antidepressants: after stopping rasagiline do not start • **FLUOXETINE** for 2 weeks, also rasagiline should not be started until at least 5 weeks after stopping fluoxetine; after stopping rasagiline do not start • **FLUVOXAMINE** for 2 weeks; risk of hypertensive crisis when rasagiline given with • **MAOIS**, avoid MAOIs for at least 2 weeks after stopping rasagiline; increased risk of CNS toxicity when rasagiline given with • **SSRIS** or • **TRICYCLICS**
- ▶ Dopaminergics: plasma concentration of rasagiline possibly reduced by **ENTACAPONE**
- ▶ Memantine: effects of dopaminergics possibly enhanced by **MEMANTINE**
- ▶ Methyl dopa: antiparkinsonian effect of dopaminergics antagonised by **METHYLDOPA**
- Sympathomimetics: avoid concomitant use of rasagiline with • **SYMPATHOMIMETICS**

**Reboxetine**

- Antibacterials: manufacturer of reboxetine advises avoid concomitant use with • **MACROLIDES**
- Antidepressants: manufacturer of reboxetine advises avoid concomitant use with • **FLUVOXAMINE**; increased risk of hypertension and CNS excitation when reboxetine given with • **MAOIS** (MAOIs should not be started until 1 week after stopping reboxetine, avoid reboxetine for 2 weeks after stopping MAOIs)
- ▶ Antiepileptics: plasma concentration of reboxetine possibly reduced by **CARBAMAZEPINE**, **PHENOBARBITAL** and **PRIMIDONE**
- Antifungals: manufacturer of reboxetine advises avoid concomitant use with • **IMIDAZOLES** and • **TRIAZOLES**

**Reboxetine** (continued)

- Antimalarials: avoidance of antidepressants advised by manufacturer of • **ARTEMETHER WITH LUMEFANTRINE** and • **ARTENIMOL WITH PIPERAQUINE**
- ▶ Atomoxetine: possible increased risk of convulsions when antidepressants given with **ATOMOXETINE**
- ▶ Diuretics: possible increased risk of hypokalaemia when reboxetine given with **LOOP DIURETICS** or **THIAZIDES AND RELATED DIURETICS**
- ▶ Ergot Alkaloids: possible risk of hypertension when reboxetine given with **ERGOTAMINE**

**Regorafenib**

- ▶ Analgesics: manufacturer of regorafenib advises avoid concomitant use with **MEFENAMIC ACID**
- Antibacterials: plasma concentration of regorafenib reduced by • **RIFAMPICIN**—manufacturer of regorafenib advises avoid concomitant use
- Anticoagulants: increased risk of bleeding when regorafenib given with • **WARFARIN**
- Antifungals: plasma concentration of regorafenib increased by • **KETOCONAZOLE**—avoid concomitant use
- Antipsychotics: avoid concomitant use of cytotoxics with • **CLOZAPINE** (increased risk of agranulocytosis)
- ▶ Cytotoxics: regorafenib increases plasma concentration of **IRINOTECAN**

**Remifentanyl** see Opioid Analgesics

**Repaglinide** see Antidiabetics

**Retigabine**

- ▶ Alcohol: increased risk of blurred vision when retigabine given with **ALCOHOL**
- Antidepressants: anticonvulsant effect of antiepileptics possibly antagonised by **MAOIS** and • **TRICYCLIC-RELATED ANTIDEPRESSANTS** (convulsive threshold lowered); anticonvulsant effect of antiepileptics antagonised by • **SSRIS** and • **TRICYCLICS** (convulsive threshold lowered)
- ▶ Antiepileptics: plasma concentration of retigabine possibly reduced by **CARBAMAZEPINE**, **FOSPHENYTOIN** and **PHENYTOIN**
- Antimalarials: anticonvulsant effect of antiepileptics antagonised by • **MEFLOQUINE**
- Antipsychotics: anticonvulsant effect of antiepileptics antagonised by • **ANTIPSYCHOTICS** (convulsive threshold lowered)
- Orlistat: possible increased risk of convulsions when antiepileptics given with • **ORLISTAT**

**Retinoids**

- Alcohol: etretinate formed from acitretin in presence of • **ALCOHOL** (increased risk of teratogenicity in women of child-bearing potential)
- Antibacterials: possible increased risk of benign intracranial hypertension when retinoids given with • **TETRACYCLINES** (avoid concomitant use)
- Anticoagulants: acitretin possibly reduces anticoagulant effect of • **COUMARINS**
- ▶ Antiepileptics: isotretinoin possibly reduces plasma concentration of **CARBAMAZEPINE**
- Antifungals: plasma concentration of alitretinoin increased by **KETOCONAZOLE**; possible increased risk of tretinoin toxicity when given with • **FLUCONAZOLE**, • **KETOCONAZOLE** and • **VORICONAZOLE**
- Cytotoxics: acitretin increases plasma concentration of • **METHOTREXATE** (also increased risk of hepatotoxicity)—avoid concomitant use
- ▶ Lipid-regulating Drugs: alitretinoin reduces plasma concentration of **SIMVASTATIN**
- Vitamins: risk of hypervitaminosis A when retinoids given with • **VITAMIN A**—avoid concomitant use

**Ribavirin**

- Antivirals: effects of ribavirin possibly reduced by • **ABACAVIR**; increased risk of side-effects when ribavirin given with • **DIDANOSINE**—avoid concomitant use; increased risk of toxicity when ribavirin given with • **STAVUDINE**; increased risk of anaemia when ribavirin given with • **ZIDOVUDINE**—avoid concomitant use
- Azathioprine: ribavirin possibly enhances myelosuppressive effects of • **AZATHIOPRINE**

**Rifabutin** see Rifamycins

**Rifampicin** see Rifamycins

### Rifamycins

**NOTE** Interactions do not apply to rifaximin

- ▶ ACE Inhibitors: rifampicin reduces plasma concentration of active metabolite of **IMIDAPRIL** (reduced antihypertensive effect)
- ▶ Aliskiren: rifampicin reduces plasma concentration of **ALISKIREN**
- ▶ Ambrisentan: rifampicin possibly increases plasma concentration of **AMBRISENTAN**
- ▶ Aminophylline: rifampicin accelerates metabolism of **AMINOPHYLLINE** (reduced plasma concentration)
- ▶ Analgesics: rifampicin reduces plasma concentration of **CELECOXIB**, **DICLOFENAC** and **ETORICOXIB**; rifampicin accelerates metabolism of **ALFENTANIL**, **CODEINE**, **FENTANYL**, **METHADONE** and **MORPHINE** (reduced effect); rifampicin possibly accelerates metabolism of **OXYCODONE**
- ▶ Angiotensin-II Receptor Antagonists: rifampicin reduces plasma concentration of **LOSARTAN** and its active metabolite
- ▶ Antacids: absorption of rifampicin reduced by **ANTACIDS**
- Antihelmintics: rifampicin reduces plasma concentration of
  - **PRAZIQUANTEL**—avoid concomitant use
- Anti-arrhythmics: rifamycins accelerate metabolism of
  - **DISOPYRAMIDE** (reduced plasma concentration); rifampicin reduces plasma concentration of ● **DRONEDARONE**—avoid concomitant use; rifampicin accelerates metabolism of ● **PROPAFENONE** (reduced effect)
- Antibacterials: increased risk of side-effects including neutropenia when rifabutin given with ● **AZITHROMYCIN**; rifamycins reduce plasma concentration of **CLARITHROMYCIN** and **DAPSONE**; plasma concentration of rifabutin increased by ● **CLARITHROMYCIN** (increased risk of toxicity—reduce rifabutin dose); plasma concentration of rifabutin possibly increased by ● **ERYTHROMYCIN** (increased risk of toxicity—reduce rifabutin dose); rifampicin possibly reduces plasma concentration of **TINIDAZOLE** and **TRIMETHOPRIM**; rifampicin reduces plasma concentration of **DOXYCYCLINE**—consider increasing dose of doxycycline; rifabutin possibly reduces plasma concentration of **BEDAQUILINE**—manufacturer of bedaquiline advises avoid concomitant use; rifampicin reduces plasma concentration of ● **BEDAQUILINE**—manufacturer of bedaquiline advises avoid concomitant use; rifampicin accelerates metabolism of **CHLORAMPHENICOL** (reduced plasma concentration); rifampicin reduces plasma concentration of ● **DELAMANID**; increased risk of hepatotoxicity when rifampicin given with ● **ISONIAZID**; rifampicin reduces plasma concentration of **LINEZOLID** (possible therapeutic failure of linezolid); rifampicin reduces plasma concentration of ● **TELITHROMYCIN** (avoid during and for 2 weeks after rifampicin)
- Anticoagulants: rifampicin possibly reduces plasma concentration of ● **APIXABAN**—manufacturer of apixaban advises avoid concomitant use when given for treatment of deep-vein thrombosis or pulmonary embolism; rifamycins accelerate metabolism of ● **COUMARINS** (reduced anticoagulant effect); rifampicin reduces plasma concentration of ● **DABIGATRAN**—manufacturer of dabigatran advises avoid concomitant use; rifampicin reduces plasma concentration of ● **RIVAROXABAN**—manufacturer of rivaroxaban advises monitor for signs of thrombosis
- Antidiabetics: rifamycins accelerate metabolism of
  - **TOLBUTAMIDE** (reduced effect); rifampicin reduces plasma concentration of ● **CANAGLIFLOZIN** and **NATEGLINIDE**; rifampicin possibly reduces effects of **LINAGLIPTIN**; rifampicin possibly antagonises hypoglycaemic effect of **REPAGLINIDE**; rifamycins possibly accelerate metabolism of ● **SULFONYLUREAS** (reduced effect)
- Antiepileptics: rifabutin reduces plasma concentration of
  - **CARBAMAZEPINE**; rifamycins accelerate metabolism of ● **FOSPHENYTOIN** and ● **PHENYTOIN** (reduced plasma concentration); rifampicin reduces plasma concentration of ● **LAMOTRIGINE**; plasma concentration of rifampicin possibly reduced by **PHENOBARBITAL** and **PRIMIDONE**

### Rifamycins (continued)

- Antifungals: rifampicin accelerates metabolism of
  - **KETOCONAZOLE** (reduced plasma concentration), also plasma concentration of rifampicin may be reduced by ketoconazole; plasma concentration of rifabutin increased by ● **FLUCONAZOLE** (increased risk of uveitis—reduce rifabutin dose); rifampicin accelerates metabolism of ● **FLUCONAZOLE** (reduced plasma concentration); rifabutin and rifampicin reduce plasma concentration of ● **ITRACONAZOLE**—manufacturer of itraconazole advises avoid concomitant use; plasma concentration of rifabutin increased by ● **POSACONAZOLE** (also plasma concentration of posaconazole reduced); rifampicin reduces plasma concentration of ● **POSACONAZOLE** and ● **TERBINAFINE**; plasma concentration of rifabutin increased by ● **VORICONAZOLE**, also rifabutin reduces plasma concentration of voriconazole (increase dose of voriconazole and also monitor for rifabutin toxicity); rifampicin reduces plasma concentration of ● **VORICONAZOLE**—avoid concomitant use; rifampicin initially increases and then reduces plasma concentration of **CASPOFUNGIN** (consider increasing dose of caspofungin); plasma concentration of rifabutin possibly increased by ● **TRIAZOLES** (increased risk of uveitis—reduce rifabutin dose)
- ▶ Antihistamines: rifampicin possibly reduces effects of **FEXOFENADINE**
- Antimalarials: avoidance of rifampicin advised by manufacturer of **ARTENIMOL WITH PIPERAQUINE**; rifampicin reduces plasma concentration of ● **MEFLOQUINE**—avoid concomitant use; rifampicin reduces plasma concentration of ● **QUININE**
- ▶ Antimuscarinics: rifampicin reduces plasma concentration of active metabolite of **FESOTERODINE**
- Antipsychotics: rifampicin accelerates metabolism of
  - **HALOPERIDOL** (reduced plasma concentration); rifabutin and rifampicin possibly reduce plasma concentration of ● **ARIPIRAZOLE** (avoid concomitant use or consider increasing the dose of aripiprazole—consult aripiprazole product literature); rifampicin possibly reduces plasma concentration of **CLOZAPINE**; rifampicin reduces plasma concentration of ● **LURASIDONE**—avoid concomitant use
- Antivirals: rifampicin possibly reduces plasma concentration of **ABACAVIR**; plasma concentration of rifabutin increased by ● **ATAZANAVIR**, ● **DARUNAVIR**, ● **FOSAMPRENAVIR** and ● **TIPRANAVIR** (reduce dose of rifabutin); rifampicin reduces plasma concentration of ● **ATAZANAVIR**, ● **DACLATASVIR**, ● **LOPINAVIR**, ● **NEVIRAPINE** and ● **RILPIVIRINE**—avoid concomitant use; avoidance of rifampicin advised by manufacturer of ● **BOCEPREVIR** (plasma concentration of boceprevir possibly reduced); rifabutin possibly reduces plasma concentration of ● **DACLATASVIR** and **SIMEPREVIR**—manufacturer of daclatasvir and simeprevir advises avoid concomitant use; rifampicin significantly reduces plasma concentration of ● **DARUNAVIR**, ● **FOSAMPRENAVIR** and ● **TELAPREVIR**—avoid concomitant use; rifampicin reduces the plasma concentration of ● **DOLUTEGRAVIR** (see under Dolutegravir, p. 557); rifampicin reduces plasma concentration of **EFAVIRENZ**—increase dose of efavirenz; plasma concentration of rifabutin reduced by **EFAVIRENZ**—increase dose of rifabutin; avoidance of rifampicin advised by manufacturer of ● **ELVITEGRAVIR**, **ETRAVIRINE**, **SOFOSBUVIR** and **ZIDOVUDINE**; rifabutin reduces plasma concentration of ● **ELVITEGRAVIR** also plasma concentration of active metabolite of rifabutin increased—reduce dose of rifabutin; plasma concentration of both drugs reduced when rifabutin given with ● **ETRAVIRINE**; rifampicin accelerates metabolism of ● **INDINAVIR** (reduced plasma concentration—avoid concomitant use); plasma concentration of rifabutin increased by ● **INDINAVIR**, also plasma concentration of indinavir decreased (reduce dose of rifabutin and increase dose of indinavir); rifampicin reduces plasma concentration of ● **MARAVIROC** and ● **RALTEGRAVIR**—consider increasing dose of maraviroc and raltegravir; plasma concentration of rifabutin possibly increased by **NEVIRAPINE**; rifabutin decreases plasma concentration of ● **RILPIVIRINE** (increase dose of rilpivirine—consult rilpivirine product literature);

**Rifamycins**

- **Antivirals** (continued)
  - plasma concentration of rifabutin increased by ● **RITONAVIR** (increased risk of toxicity—reduce rifabutin dose); rifampicin reduces plasma concentration of **RITONAVIR**; rifampicin significantly reduces plasma concentration of ● **SAQUINAVIR**, also risk of hepatotoxicity—avoid concomitant use; plasma concentration of rifabutin increased by ● **SAQUINAVIR** (also plasma concentration of saquinavir reduced)—reduce rifabutin dose; rifampicin reduces plasma concentration of ● **SIMEPREVIR**—manufacturer of simeprevir advises avoid concomitant use; avoidance of rifabutin advised by manufacturer of **SOFOSBUVIR** and ● **TELAPEVIR**; rifampicin possibly reduces plasma concentration of ● **TIPRANAVIR**—avoid concomitant use
- **Anxiolytics and Hypnotics**: rifampicin accelerates metabolism of **DIAZEPAM** and **DALEPLON** (reduced plasma concentration); rifampicin possibly accelerates metabolism of **BENZODIAZEPINES** (reduced plasma concentration); rifampicin possibly accelerates metabolism of **BUSPIRONE**; rifampicin accelerates metabolism of **ZOLPIDEM** (reduced plasma concentration and reduced effect); rifampicin significantly reduces plasma concentration of **ZOPICLONE**
- **Aprepitant**: rifampicin reduces plasma concentration of **APREPITANT**
- **Atovaquone**: avoidance of concomitant rifabutin advised by manufacturer of **ATOVAQUONE** (plasma concentration of both drugs reduced); rifampicin reduces plasma concentration of ● **ATOVAQUONE** (and concentration of rifampicin increased)—avoid concomitant use
- **Avanafil**: rifampicin possibly reduces plasma concentration of **AVANAFIL**—manufacturer of avanafil advises avoid concomitant use
- **Beta-blockers**: rifampicin accelerates metabolism of **BISOPROLOL** and **PROPRANOLOL** (plasma concentration significantly reduced); rifampicin reduces plasma concentration of **CARVEDILOL**, **CELIPROLOL** and **METOPROLOL**; rifampicin possibly reduces plasma concentration of *oral* **TIMOLOL**
- **Bosentan**: rifampicin reduces plasma concentration of ● **BOSENTAN**—avoid concomitant use
- **Calcium-channel Blockers**: rifampicin possibly reduces plasma concentration of **FELODIPINE**; rifampicin possibly accelerates metabolism of ● **ISRADIPINE** and ● **NICARDIPINE** (possible significantly reduced plasma concentration); rifampicin accelerates metabolism of ● **DILTIAZEM**, ● **NIFEDIPINE**, ● **NIMODIPINE** and ● **VERAPAMIL** (plasma concentration significantly reduced)
- **Cannabis Extract**: rifampicin reduces plasma concentration of ● **CANNABIS EXTRACT**—manufacturer of cannabis extract advises avoid concomitant use
- **Cardiac Glycosides**: rifampicin possibly reduces plasma concentration of **DIGOXIN**
- **Ciclosporin**: rifampicin accelerates metabolism of ● **CYCLOSPORIN** (reduced plasma concentration)
- **Cobicistat**: rifabutin reduces plasma concentration of ● **COBICISTAT** (adjust dose—consult product literature); rifampicin possibly reduces plasma concentration of ● **COBICISTAT**—manufacturer of cobicistat advises avoid concomitant use
- **Corticosteroids**: rifamycins accelerate metabolism of ● **CORTICOSTEROIDS** (reduced effect)
- **Cytotoxics**: rifampicin possibly reduces effects of **BRENTUXIMAB VEDOTIN**; rifampicin reduces plasma concentration of **AFATINIB**, **RUXOLITINIB**, **SORAFENIB** and ● **TRABECTEDIN**; rifabutin possibly decreases plasma concentration of **AXITINIB** (increase dose of axitinib—consult axitinib product literature); rifampicin decreases plasma concentration of **AXITINIB** (increase dose of axitinib—consult axitinib product literature); rifabutin possibly reduces plasma concentration of ● **BOSUTINIB**, **CRIZOTINIB** and **PONATINIB**—manufacturer of bosutinib, crizotinib and ponatinib advises avoid concomitant use; rifampicin reduces plasma concentration of ● **BORTEZOMIB**, ● **BOSUTINIB**, ● **CABAZITAXEL**, ● **CRIZOTINIB**, ● **PONATINIB**, ● **REGORAFENIB** and ● **VANDETANIB**—manufacturer of bortezomib, bosutinib, cabazitaxel, crizotinib, ponatinib,

**Rifamycins**

- **Cytotoxics** (continued)
  - regorafenib and vandetanib advises avoid concomitant use; rifampicin reduces plasma concentration of ● **CABOZANTINIB**, ● **GEFITINIB**, ● **IBRUTINIB**, ● **IDELALISIB**, ● **IMATINIB** and ● **NILOTINIB**—avoid concomitant use; avoidance of rifampicin advised by manufacturer of **DABRAFENIB**, ● **LAPATINIB** and **VEMURAFENIB**; rifampicin accelerates metabolism of ● **DASATINIB** (reduced plasma concentration—avoid concomitant use); rifampicin accelerates metabolism of **ERLOTINIB** and **SUNITINIB** (reduced plasma concentration); rifampicin reduces plasma concentration of ● **EVEROLIMUS** (avoid concomitant use or consider increasing the dose of everolimus—consult everolimus product literature); avoidance of rifabutin advised by manufacturer of ● **CABAZITAXEL**, ● **LAPATINIB** and **VEMURAFENIB**; rifampicin possibly reduces plasma concentration of **ERIBULIN** and ● **PAZOPANIB**; rifampicin reduces plasma concentration of active metabolite of ● **TEMSIROLIMUS**—avoid concomitant use; rifampicin possibly reduces plasma concentration of ● **VINFLUNINE**—manufacturer of vinflunine advises avoid concomitant use; avoidance of rifampicin advised by manufacturer of ● **VISMODEGIB** (plasma concentration of vismodegib possibly reduced)
- **Deferasirox**: rifampicin reduces plasma concentration of **DEFERASIROX**
- **Diuretics**: rifampicin reduces plasma concentration of ● **EPLERENONE**—avoid concomitant use
- **Fosaprepitant**: rifampicin reduces plasma concentration of **FOSAPREPITANT**
- **Hormone Antagonists**: rifabutin possibly reduces plasma concentration of ● **ABIRATERONE**—manufacturer of abiraterone advises avoid concomitant use; rifampicin reduces plasma concentration of ● **ABIRATERONE**—manufacturer of abiraterone advises avoid concomitant use; avoidance of rifampicin advised by manufacturer of **ENZALUTAMIDE**; rifampicin possibly reduces plasma concentration of **EXEMESTANE**; rifampicin accelerates metabolism of **TAMOXIFEN** (reduced plasma concentration)
- **5HT<sub>3</sub>-receptor Antagonists**: rifampicin accelerates metabolism of **ONDANSETRON** (reduced effect)
- **Ivacaftor**: rifabutin possibly reduces plasma concentration of ● **IVACAFTOR**—manufacturer of ivacaftor advises avoid concomitant use; rifampicin reduces plasma concentration of ● **IVACAFTOR**—manufacturer of ivacaftor advises avoid concomitant use
- **Leflunomide**: rifampicin possibly increases plasma concentration of active metabolite of **LEFLUNOMIDE**
- **Lipid-regulating Drugs**: rifampicin possibly reduces plasma concentration of **ATORVASTATIN** and **SIMVASTATIN**; rifampicin accelerates metabolism of **FLUVASTATIN** (reduced effect)
- **Macitentan**: rifampicin reduces plasma concentration of ● **MACITENTAN**—avoid concomitant use
- **Muscle Relaxants**: rifampicin possibly reduces plasma concentration of **TIZANIDINE**
- **Mycophenolate**: rifampicin reduces plasma concentration of active metabolite of ● **MYCOPHENOLATE**
- **Nintedanib**: rifampicin reduces plasma concentration of ● **NINTEDEDANIB**—avoid concomitant use
- **Oestrogens**: rifamycins accelerate metabolism of ● **OESTROGENS** (reduced contraceptive effect with combined oral contraceptives, contraceptive patches, and vaginal rings—see Contraceptive Interactions in BNF)
- **Progestogens**: rifamycins accelerate metabolism of ● **PROGESTOGENS** (reduced contraceptive effect with combined oral contraceptives, progestogen-only oral contraceptives, contraceptive patches, vaginal rings, etonogestrel-releasing implant, and emergency hormonal contraception—see Contraceptive Interactions in BNF)
- **Ranolazine**: rifampicin reduces plasma concentration of ● **RANOLAZINE**—manufacturer of ranolazine advises avoid concomitant use
- **Roflumilast**: rifampicin inhibits effects of ● **ROFLUMILAST** (manufacturer of roflumilast advises avoid concomitant use)
- **Sirolimus**: rifabutin and rifampicin reduce plasma concentration of ● **SIROLIMUS**—avoid concomitant use



**Rifamycins** (continued)

- Tacrolimus: rifabutin possibly reduces plasma concentration of **TACROLIMUS**; rifampicin reduces plasma concentration of **TACROLIMUS**
- Tadalafil: rifampicin reduces plasma concentration of **TADALAFIL**—manufacturer of tadalafil advises avoid concomitant use
- Teriflunomide: rifampicin reduces plasma concentration of **TERIFLUNOMIDE**
- Theophylline: rifampicin accelerates metabolism of **THEOPHYLLINE** (reduced plasma concentration)
- Thyroid Hormones: rifampicin accelerates metabolism of **LEVOTHYROXINE** (may increase requirements for levothyroxine in hypothyroidism)
- Tibolone: rifampicin accelerates metabolism of **TIBOLONE** (reduced plasma concentration)
- Ticagrelor: rifampicin reduces plasma concentration of **TICAGRELOL**
- Tolvaptan: rifampicin reduces plasma concentration of **TOLVAPTAN**
- Ulcer-healing Drugs: rifampicin accelerates metabolism of **CIMETIDINE** (reduced plasma concentration)
- Ulipristal: avoidance of rifampicin advised by manufacturer of **ULIPRISTAL** (contraceptive effect of ulipristal possibly reduced)
- Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Rilpivirine**

- Analgesics: rilpivirine possibly reduces plasma concentration of **METHADONE**
- Antacids: manufacturer of rilpivirine advises give **ANTACIDS** 2 hours before or 4 hours after rilpivirine
- Antibacterials: manufacturer of rilpivirine advises avoid concomitant use with **CLARITHROMYCIN** and **ERYTHROMYCIN** (plasma concentration of rilpivirine possibly increased); plasma concentration of rilpivirine decreased by **RIFABUTIN** (increase dose of rilpivirine—consult rilpivirine product literature); plasma concentration of rilpivirine reduced by **RIFAMPICIN**—avoid concomitant use
- Anticoagulants: rilpivirine possibly increases plasma concentration of **DABIGATRAN**
- Antidepressants: manufacturer of rilpivirine advises avoid concomitant use with **ST JOHN'S WORT** (plasma concentration of rilpivirine possibly reduced)
- Antiepileptics: manufacturer of rilpivirine advises avoid concomitant use with **CARBAMAZEPINE**, **FOSPHENYTOIN**, **OXCARBAZEPINE**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE** (plasma concentration of rilpivirine possibly reduced)
- Antivirals: manufacturer of rilpivirine advises give **DIDANOSINE** 2 hours before or 4 hours after rilpivirine; avoidance of rilpivirine advised by manufacturer of **NEVIRAPINE**
- Calcium Salts: manufacturer of rilpivirine advises give **CALCIUM SALTS** 2 hours before or 4 hours after rilpivirine
- Corticosteroids: manufacturer of rilpivirine advises avoid concomitant use with **DEXAMETHASONE** (except when given as a single dose)
- Orlistat: absorption of rilpivirine possibly reduced by **ORLISTAT**
- Ulcer-healing Drugs: manufacturer of rilpivirine advises avoid concomitant use with **ESOMEPRAZOLE**, **LANSOPRAZOLE**, **PANTOPRAZOLE** and **RABEPRAZOLE** (plasma concentration of rilpivirine possibly reduced); plasma concentration of rilpivirine reduced by **OMEPRAZOLE**—avoid concomitant use; manufacturer of rilpivirine advises avoid **HISTAMINE H<sub>2</sub>-ANTAGONISTS** for 12 hours before or 4 hours after rilpivirine—consult product literature

**Riociguat**

- Antacids: absorption of riociguat reduced by **ANTACIDS** (give at least 2 hours before or 1 hour after riociguat)
- Antifungals: manufacturer of riociguat advises avoid concomitant use with **ITRACONAZOLE**, **KETOCONAZOLE** and **VORICONAZOLE**
- Antivirals: manufacturer of riociguat advises avoid concomitant use with **RITONAVIR**

**Riociguat** (continued)

- Avanafil: possible enhanced hypotensive effect when riociguat given with **AVANAFIL**—avoid concomitant use
- Bosentan: plasma concentration of riociguat reduced by **BOSENTAN**
- Nitrates: possible enhanced hypotensive effect when riociguat given with **NITRATES**—avoid concomitant use
- Sildenafil: enhanced hypotensive effect when riociguat given with **SILDENAFIL**—avoid concomitant use
- Tadalafil: possible enhanced hypotensive effect when riociguat given with **TADALAFIL**—avoid concomitant use
- Vardenafil: possible enhanced hypotensive effect when riociguat given with **VARDEFANIL**—avoid concomitant use

**Risedronate Sodium** see Bisphosphonates

**Risperidone** see Antipsychotics

**Ritonavir**

- Alpha-blockers: ritonavir possibly increases plasma concentration of **ALFUZOSIN**—avoid concomitant use
- Aminophylline: ritonavir accelerates metabolism of **AMINOPHYLLINE** (reduced plasma concentration)
- Analgesics: ritonavir possibly increases plasma concentration of **NSAIDS** and **BUPRENORPHINE**; ritonavir increases plasma concentration of **DEXTROPROPOXYPHENE** and **PIROXICAM** (risk of toxicity)—avoid concomitant use; ritonavir increases plasma concentration of **ALFENTANIL** and **FENTANYL**; ritonavir reduces plasma concentration of **METHADONE**; ritonavir possibly reduces plasma concentration of **MORPHINE**; ritonavir reduces plasma concentration of **PETHIDINE**, but increases plasma concentration of toxic metabolite of pethidine (avoid concomitant use)
- Anthelmintics: ritonavir possibly reduces plasma concentration of active metabolite of **ALBENDAZOLE**—consider increasing albendazole dose when given for systemic infections
- Anti-arrhythmics: ritonavir increases plasma concentration of **AMIODARONE** and **PROPAFENONE** (increased risk of ventricular arrhythmias—avoid concomitant use); ritonavir possibly increases plasma concentration of **DISOPYRAMIDE** (increased risk of toxicity); avoidance of ritonavir advised by manufacturer of **DRONEDARONE**; ritonavir possibly increases plasma concentration of **FLECAINIDE** (increased risk of ventricular arrhythmias—avoid concomitant use)
- Antibacterials: ritonavir possibly increases plasma concentration of **AZITHROMYCIN** and **ERYTHROMYCIN**; ritonavir increases plasma concentration of **CLARITHROMYCIN** (reduce dose of clarithromycin in renal impairment); ritonavir increases plasma concentration of **RIFABUTIN** (increased risk of toxicity—reduce rifabutin dose); plasma concentration of ritonavir reduced by **RIFAMPICIN**; ritonavir possibly increases plasma concentration of **BEDAQUILINE**—avoid concomitant use if ritonavir given for more than 14 days; ritonavir increases plasma concentration of **DELAMANID**; plasma concentration of both drugs increased when ritonavir given with **FUSIDIC ACID**—avoid concomitant use; avoidance of concomitant ritonavir in severe renal and hepatic impairment advised by manufacturer of **TELITHROMYCIN**
- Anticoagulants: ritonavir may enhance or reduce anticoagulant effect of **WARFARIN**; avoidance of ritonavir advised by manufacturer of **APIXABAN**; ritonavir possibly enhances anticoagulant effect of **COUMARINS** and **PHENINDIONE**; ritonavir increases plasma concentration of **RIVAROXABAN**—avoid concomitant use
- Antidepressants: ritonavir possibly reduces plasma concentration of **PAROXETINE**; ritonavir increases plasma concentration of **TRAZODONE** (increased risk of toxicity); ritonavir possibly increases plasma concentration of **SSRIS** and **TRICYCLICS**; plasma concentration of ritonavir reduced by **ST JOHN'S WORT**—avoid concomitant use
- Antidiabetics: ritonavir possibly increases plasma concentration of **TOLBUTAMIDE**
- Antiepileptics: ritonavir possibly increases plasma concentration of **CARBAMAZEPINE**; plasma concentration of ritonavir possibly reduced by **FOSPHENYTOIN** and **PHENYTOIN**, also plasma concentration of fosphenytoin and phenytoin possibly affected; ritonavir possibly reduces plasma

**Ritonavir**

- Antiepileptics (continued)
  - concentration of **LAMOTRIGINE**, **SODIUM VALPROATE** and **VALPROIC ACID**
- Antifungals: ritonavir increases plasma concentration of
  - **KETOCONAZOLE** (reduce dose of ketoconazole); plasma concentration of ritonavir increased by **FLUCONAZOLE**; combination of ritonavir with • **ITRACONAZOLE** may increase plasma concentration of either drug (or both); ritonavir reduces plasma concentration of • **VORICONAZOLE**—avoid concomitant use
- ▶ Antihistamines: ritonavir possibly increases plasma concentration of **NON-SEDATING ANTIHISTAMINES**
- Antimalarials: caution with ritonavir advised by manufacturer of **ARTEMETHER WITH LUMEFANTRINE**; plasma concentration of ritonavir possibly reduced by **MEFLOQUINE**; ritonavir increases plasma concentration of • **QUININE** (increased risk of toxicity)
- Antimuscarinics: avoidance of ritonavir advised by manufacturer of **DARIFENACIN** and **TOLTERODINE**; manufacturer of fesoterodine advises dose reduction when ritonavir given with **FESOTERODINE**—consult fesoterodine product literature; ritonavir possibly increases plasma concentration of
  - **SOLIFENACIN**—see under Solifenacin, p. 670
- Antipsychotics: ritonavir possibly increases plasma concentration of • **ANTIPSYCHOTICS**; ritonavir possibly increases plasma concentration of • **ARIPRAZOLE** (reduce dose of aripiprazole—consult aripiprazole product literature); manufacturer of ritonavir advises avoid concomitant use with • **CLOZAPINE** (increased risk of toxicity); ritonavir possibly increases plasma concentration of • **LURASIDONE**—avoid concomitant use; ritonavir reduces plasma concentration of **OLANZAPINE**—consider increasing dose of olanzapine; ritonavir increases plasma concentration of • **PIMOZIDE** (increased risk of ventricular arrhythmias—avoid concomitant use); ritonavir possibly increases plasma concentration of • **QUETIAPINE**—manufacturer of quetiapine advises avoid concomitant use
- Antivirals: plasma concentration of both drugs reduced when ritonavir given with • **BOCEPREVIR**; manufacturer of ritonavir advises ritonavir and **DIDANOSINE** should be taken 2.5 hours apart; ritonavir increases the toxicity of • **EFAVIRENZ**, monitor liver function tests —manufacturer of **Atripla®** advises avoid concomitant use with *high-dose* ritonavir; ritonavir increases plasma concentration of **INDINAVIR**, **MARAVIROC** and • **SAQUINAVIR**; ritonavir increases plasma concentration of • **SIMEPREVIR**—manufacturer of simeprevir advises avoid concomitant use; ritonavir possibly reduces plasma concentration of **TELEPREVIR**
- Anxiolytics and Hypnotics: ritonavir possibly increases plasma concentration of • **ANXIOLYTICS AND HYPNOTICS**; ritonavir possibly increases plasma concentration of • **ALPRAZOLAM**, • **DIAZEPAM**, • **FLURAZEPAM** and • **ZOLPIDEM** (risk of extreme sedation and respiratory depression—avoid concomitant use); ritonavir possibly increases plasma concentration of • **MIDAZOLAM** (risk of prolonged sedation—avoid concomitant use of *oral* midazolam); ritonavir increases plasma concentration of **BUSPIRONE** (increased risk of toxicity)
- ▶ Aprepitant: ritonavir possibly increases plasma concentration of **APREPITANT**
- ▶ Atovaquone: ritonavir possibly reduces plasma concentration of **ATOVAQUONE**—manufacturer of atovaquone advises avoid concomitant use
- Avafafil: ritonavir significantly increases plasma concentration of • **AVANAFIL**—avoid concomitant use
- Bosentan: ritonavir increases plasma concentration of • **BOSENTAN** (consider reducing dose of bosentan)
- ▶ Bupropion: ritonavir reduces plasma concentration of **BUPROPION**
- Calcium-channel Blockers: ritonavir possibly increases plasma concentration of • **CALCIUM-CHANNEL BLOCKERS**; avoidance of ritonavir advised by manufacturer of **LERCANIDIPINE**
- ▶ Cardiac Glycosides: ritonavir possibly increases plasma concentration of **DIGOXIN**
- Ciclosporin: ritonavir possibly increases plasma concentration of • **CICLOSPORIN**

**Ritonavir (continued)**

- Cilostazol: ritonavir possibly increases plasma concentration of • **CILOSTAZOL** (see under Cilostazol, p. 206)
- Colchicine: ritonavir possibly increases risk of • **COLCHICINE** toxicity—suspend or reduce dose of colchicine (avoid concomitant use in hepatic or renal impairment)
- Corticosteroids: ritonavir possibly increases plasma concentration of • **CORTICOSTEROIDS**—increased risk of adrenal suppression; ritonavir possibly increases plasma concentration of • **BUDESONIDE** (including *inhaled*, *intranasal*, and *rectal* budesonide)—increased risk of adrenal suppression; ritonavir increases plasma concentration of *inhaled* and *intranasal* • **FLUTICASON**—increased risk of adrenal suppression
- Cytotoxics: ritonavir increases the plasma concentration of **AFATINIB**—manufacturer of afatinib advises separating administration of ritonavir by 6 to 12 hours; ritonavir possibly increases plasma concentration of **AXITINIB** (reduce dose of axitinib—consult axitinib product literature); ritonavir possibly increases the plasma concentration of • **BOSUTINIB** and • **CABAZITAXEL**—manufacturer of bosutinib and cabazitaxel advises avoid or consider reducing dose of bosutinib and cabazitaxel; ritonavir possibly increases plasma concentration of **CABOZANTINIB** and **VINBLASTINE**; ritonavir possibly increases plasma concentration of • **CRIZOTINIB**, • **EVEROLIMUS**, **NILOTINIB** and • **VINFLUNINE**—manufacturer of crizotinib, everolimus, nilotinib and vinflunine advises avoid concomitant use; avoidance of ritonavir advised by manufacturer of **DASATINIB** (plasma concentration of dasatinib possibly increased); ritonavir possibly increases the plasma concentration of • **IBRUTINIB**—reduce dose of ibrutinib (see under Ibrutinib, p. 809); avoidance of ritonavir advised by manufacturer of • **LAPATINIB**; ritonavir possibly increases plasma concentration of • **PAZOPANIB** (reduce dose of pazopanib); ritonavir possibly increases plasma concentration of **PONATINIB**—consider reducing initial dose of ponatinib (see under Ponatinib, p. 814); manufacturer of ruxolitinib advises dose reduction when ritonavir given with • **RUXOLITINIB**—consult ruxolitinib product literature; ritonavir possibly increases plasma concentration of • **DOCETAXEL**—manufacturer of docetaxel advises avoid concomitant use or consider reducing docetaxel dose; ritonavir increases plasma concentration of **PACCLITAXEL**
- Dapoxetine: avoidance of ritonavir advised by manufacturer of • **DAPOXETINE** (increased risk of toxicity)
- Diuretics: ritonavir increases plasma concentration of • **EPLERENONE**—avoid concomitant use
- Domperidone: possible increased risk of ventricular arrhythmias when ritonavir given with • **DOMPERIDONE**—avoid concomitant use
- Ergot Alkaloids: increased risk of ergotism when ritonavir given with • **ERGOMETRINE** or • **ERGOTAMINE**—avoid concomitant use
- ▶ Fosaprepitant: ritonavir possibly increases plasma concentration of **FOSAPREPITANT**
- 5HT<sub>2</sub>-receptor Agonists: ritonavir increases plasma concentration of • **ELETRIPTAN** (risk of toxicity)—avoid concomitant use
- Ivabradine: ritonavir possibly increases plasma concentration of • **IVABRADINE**—avoid concomitant use
- Lipid-regulating Drugs: possible increased risk of myopathy when ritonavir given with **ATORVASTATIN**; possible increased risk of myopathy when ritonavir given with • **ROSUVASTATIN**—manufacturer of rosuvastatin advises avoid concomitant use; increased risk of myopathy when ritonavir given with • **SIMVASTATIN** (avoid concomitant use); avoidance of ritonavir advised by manufacturer of • **LOMITAPIDE** (plasma concentration of lomitapide possibly increased)
- ▶ Mirabegron: when given with ritonavir avoid or reduce dose of **MIRABEGRON** in hepatic or renal impairment—see Mirabegron, p. 671
- Oestrogens: ritonavir accelerates metabolism of • **OESTROGENS** (reduced contraceptive effect with combined oral contraceptives, contraceptive patches, and vaginal rings—see Contraceptive Interactions in BNF)

**Ritonavir** (continued)

- **Orlistat**: absorption of ritonavir possibly reduced by ● **ORLISTAT**
- **Ranolazine**: ritonavir possibly increases plasma concentration of ● **RANOLAZINE**—manufacturer of ranolazine advises avoid concomitant use
- **Riociguat**: avoidance of ritonavir advised by manufacturer of **RIOCIQUAT**
- **Sildenafil**: ritonavir significantly increases plasma concentration of ● **SILDENAFIL**—avoid concomitant use
- **Sympathomimetics**: ritonavir possibly increases plasma concentration of **DEXAMFETAMINE**
- **Sympathomimetics, Beta<sub>2</sub>**: manufacturer of ritonavir advises avoid concomitant use with **SALMETEROL**
- **Tacrolimus**: ritonavir possibly increases plasma concentration of ● **TACROLIMUS**
- **Tadalafil**: ritonavir increases plasma concentration of ● **TADALAFIL**—manufacturer of tadalafil advises avoid concomitant use
- **Theophylline**: ritonavir accelerates metabolism of ● **THEOPHYLLINE** (reduced plasma concentration)
- **Ticagrelor**: ritonavir possibly increases plasma concentration of ● **TICAGRELOR**—manufacturer of ticagrelor advises avoid concomitant use
- **Ulipristal**: avoidance of ritonavir advised by manufacturer of ● **ULIPRISTAL** (contraceptive effect of ulipristal possibly reduced)
- **Vardenafil**: ritonavir increases plasma concentration of ● **VARDENAFIL**—avoid concomitant use

**Rituximab**

- **Antipsychotics**: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- **Vaccines**: risk of generalised infections when monoclonal antibodies given with live ● **VACCINES**—avoid concomitant use

**Rivaroxaban**

- **Analgesics**: increased risk of haemorrhage when anticoagulants given with *intravenous* ● **DICLOFENAC** (avoid concomitant use, including low-dose heparins); increased risk of haemorrhage when anticoagulants given with ● **KETOROLAC** (avoid concomitant use, including low-dose heparins)
- **Anti-arrhythmics**: manufacturer of rivaroxaban advises avoid concomitant use with **DRONEDARONE**
- **Antibacterials**: plasma concentration of rivaroxaban reduced by ● **RIFAMPICIN**—manufacturer of rivaroxaban advises monitor for signs of thrombosis
- **Anticoagulants**: increased risk of haemorrhage when rivaroxaban given with other ● **ANTICOAGULANTS** (avoid concomitant use except when switching with other anticoagulants or using heparin to maintain catheter patency); increased risk of haemorrhage when other anticoagulants given with ● **APIXABAN** and ● **DABIGATRAN** (avoid concomitant use except when switching with other anticoagulants or using heparin to maintain catheter patency)
- **Antidepressants**: plasma concentration of rivaroxaban possibly reduced by ● **ST JOHN'S WORT**—manufacturer of rivaroxaban advises monitor for signs of thrombosis
- **Antiepileptics**: plasma concentration of rivaroxaban possibly reduced by ● **CARBAMAZEPINE**, ● **FOSPHENYTOIN**, ● **PHENOBARBITAL**, ● **PHENYTOIN** and ● **PRIMIDONE**—manufacturer of rivaroxaban advises monitor for signs of thrombosis
- **Antifungals**: plasma concentration of rivaroxaban increased by ● **KETOCONAZOLE**—avoid concomitant use; manufacturer of rivaroxaban advises avoid concomitant use with **ITRACONAZOLE**, **POSACONAZOLE** and **VORICONAZOLE**
- **Antivirals**: manufacturer of rivaroxaban advises avoid concomitant use with **ATAZANAVIR**, **DARUNAVIR**, **FOSAMPRENAVIR**, **INDINAVIR**, **SAQUINAVIR** and **TIPRANAVIR**; manufacturers advise avoid concomitant use of rivaroxaban with **LOPINAVIR**; plasma concentration of rivaroxaban increased by ● **RITONAVIR**—avoid concomitant use
- **Cobicistat**: anticoagulant effect of rivaroxaban possibly enhanced by ● **COBICISTAT**—avoid concomitant use

**Rivastigmine** see Parasympathomimetics

**Rizatriptan** see 5HT<sub>1</sub>-receptor Agonists (under HT)

**Rocuronium** see Muscle Relaxants

**Roflumilast**

- **Aminophylline**: manufacturer of roflumilast advises avoid concomitant use with **AMINOPHYLLINE**
- **Antibacterials**: effects of roflumilast inhibited by ● **RIFAMPICIN** (manufacturer of roflumilast advises avoid concomitant use)
- **Antidepressants**: metabolism of roflumilast inhibited by **FLUVOXAMINE**
- **Antiepileptics**: effects of roflumilast possibly inhibited by **CARBAMAZEPINE**, **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE** (manufacturer of roflumilast advises avoid concomitant use)
- **Theophylline**: manufacturer of roflumilast advises avoid concomitant use with **THEOPHYLLINE**
- **Ulcer-healing Drugs**: metabolism of roflumilast inhibited by **CIMETIDINE**

**Ropinireole**

- **Antibacterials**: metabolism of ropinireole inhibited by **CIPROFLOXACIN** (increased plasma concentration)
- **Antipsychotics**: manufacturer of ropinireole advises avoid concomitant use of **ANTIPSYCHOTICS** (antagonism of effect)
- **Memantine**: effects of dopaminergics possibly enhanced by **MEMANTINE**
- **Methyldopa**: antiparkinsonian effect of dopaminergics antagonised by **METHYLDOPA**
- **Metoclopramide**: manufacturer of ropinireole advises avoid concomitant use of **METOCLOPRAMIDE** (antagonism of effect)
- **Oestrogens**: plasma concentration of ropinireole increased by **OESTROGENS**

**Ropivacaine**

- **Anti-arrhythmics**: increased myocardial depression when ropivacaine given with **ANTI-ARRHYTHMICS**
- **Antidepressants**: metabolism of ropivacaine inhibited by **FLUVOXAMINE**—avoid prolonged administration of ropivacaine

**Rosuvastatin** see Statins

**Rotavirus Vaccine** see Vaccines

**Rotigotine**

- **Antipsychotics**: manufacturer of rotigotine advises avoid concomitant use of **ANTIPSYCHOTICS** (antagonism of effect)
- **Memantine**: effects of dopaminergics possibly enhanced by **MEMANTINE**
- **Methyldopa**: antiparkinsonian effect of dopaminergics antagonised by **METHYLDOPA**
- **Metoclopramide**: manufacturer of rotigotine advises avoid concomitant use of **METOCLOPRAMIDE** (antagonism of effect)

**Rufinamide**

- **Antidepressants**: anticonvulsant effect of antiepileptics possibly antagonised by **MAOIS** and ● **TRICYCLIC-RELATED ANTIDEPRESSANTS** (convulsive threshold lowered); anticonvulsant effect of antiepileptics antagonised by ● **SSRIS** and ● **TRICYCLICS** (convulsive threshold lowered)
- **Antiepileptics**: plasma concentration of both drugs possibly reduced when rufinamide given with **CARBAMAZEPINE**; plasma concentration of rufinamide possibly reduced by **FOSPHENYTOIN** and **PHENYTOIN**, also plasma concentration of fosphenytoin and phenytoin possibly increased; plasma concentration of rufinamide possibly reduced by **PHENOBARBITAL** and **PRIMIDONE**; plasma concentration of rufinamide possibly increased by **SODIUM VALPROATE** and **VALPROIC ACID** (reduce dose of rufinamide)
- **Antimalarials**: anticonvulsant effect of antiepileptics antagonised by ● **MEFLOQUINE**
- **Antipsychotics**: anticonvulsant effect of antiepileptics antagonised by ● **ANTIPSYCHOTICS** (convulsive threshold lowered)
- **Oestrogens**: rufinamide accelerates metabolism of ● **OESTROGENS** (reduced contraceptive effect with combined oral contraceptives, contraceptive patches, and vaginal rings—see Contraceptive Interactions in BNF)
- **Orlistat**: possible increased risk of convulsions when antiepileptics given with ● **ORLISTAT**
- **Progestogens**: rufinamide accelerates metabolism of ● **PROGESTOGENS** (reduced contraceptive effect with combined oral contraceptives, progestogen-only oral contraceptives,

**Rufinamide**

- Progestogens (continued)  
contraceptive patches, vaginal rings, etonogestrel-releasing implant, and emergency hormonal contraception—see Contraceptive Interactions in BNF)

**Ruxolitinib**

- Antifungals: manufacturer of ruxolitinib advises dose reduction when ruxolitinib given with • **CLARITHROMYCIN** and • **TELITHROMYCIN**—consult ruxolitinib product literature; plasma concentration of ruxolitinib reduced by **RIFAMPICIN**
- Antifungals: manufacturer of ruxolitinib advises dose reduction when ruxolitinib given with • **FLUCONAZOLE**, • **ITRACONAZOLE**, • **KETOCONAZOLE**, • **POSACONAZOLE** and • **VORICONAZOLE**—consult ruxolitinib product literature
- Antipsychotics: avoid concomitant use of cytotoxics with • **CLOZAPINE** (increased risk of agranulocytosis)
- Antivirals: manufacturer of ruxolitinib advises dose reduction when ruxolitinib given with • **BOCEPREVIR**, • **INDINAVIR**, • **LOPINAVIR**, • **RITONAVIR**, • **SAQUINAVIR** and • **TELAPREVIR**—consult ruxolitinib product literature

**St John's Wort**

- Aminophylline: St John's wort possibly reduces plasma concentration of **AMINOPHYLLINE**
- Analgesics: St John's wort possibly reduces plasma concentration of **METHADONE**
- Anti-arrhythmics: St John's wort possibly reduces plasma concentration of • **DRONEDARONE**—avoid concomitant use
- Antibacterials: St John's wort possibly reduces plasma concentration of **BEDAQUILINE**—manufacturer of bedaquiline advises avoid concomitant use; St John's wort reduces plasma concentration of • **TELITHROMYCIN** (avoid during and for 2 weeks after St John's wort)
- Anticoagulants: St John's wort possibly reduces plasma concentration of • **APIXABAN**—manufacturer of apixaban advises avoid concomitant use when given for treatment of deep-vein thrombosis or pulmonary embolism; St John's wort reduces anticoagulant effect of • **COUMARINS** (avoid concomitant use); St John's wort possibly reduces plasma concentration of **DABIGATRAN**—manufacturer of dabigatran advises avoid concomitant use; St John's wort possibly reduces plasma concentration of • **RIVAROXABAN**—manufacturer of rivaroxaban advises monitor for signs of thrombosis
- Antidepressants: possible increased serotonergic effects when St John's wort given with **DULOXETINE** or **VENLAFAXINE**; St John's wort reduces plasma concentration of **AMITRIPTYLINE**; increased serotonergic effects when St John's wort given with • **SSRIS**—avoid concomitant use
- Antiepileptics: St John's wort possibly reduces plasma concentration of **CARBAMAZEPINE**; St John's wort possibly reduces plasma concentration of • **FOSPHENYTOIN**, • **PHENOBARBITAL**, • **PHENYTOIN** and • **PRIMIDONE**—avoid concomitant use
- Antifungals: St John's wort reduces plasma concentration of • **VORICONAZOLE**—avoid concomitant use
- Antimalarials: avoidance of antidepressants advised by manufacturer of • **ARTEMETHER WITH LUMEFANTRINE** and • **ARTENIMOL WITH PIPERAQUINE**
- Antipsychotics: St John's wort possibly reduces plasma concentration of • **ARIPIPRAZOLE** (avoid concomitant use or consider increasing the dose of aripiprazole—consult aripiprazole product literature); St John's wort possibly reduces plasma concentration of • **LURASIDONE**—avoid concomitant use
- Antivirals: St John's wort reduces plasma concentration of • **ATAZANAVIR**, • **DARUNAVIR**, • **EFAVIRENZ**, • **FOSAPRENAVIR**, • **INDINAVIR**, • **LOPINAVIR**, • **NEVIRAPINE**, • **RITONAVIR** and • **SAQUINAVIR**—avoid concomitant use; St John's wort possibly reduces plasma concentration of **DACLATASVIR** and • **SIMEPREVIR**—manufacturer of daclatasvir and simeprevir advises avoid concomitant use; avoidance of St John's wort advised by manufacturer of **DOLUTEGRAVIR**, • **ELVITEGRAVIR**, **ETRAVIRINE**, **SOFOSBUVIR** and • **TELAPREVIR**; St John's wort possibly reduces plasma concentration of • **MARAVIROC** and • **TIPRANAVIR**—avoid concomitant use; avoidance of St John's wort

**St John's Wort**

- Antivirals (continued)  
wort advised by manufacturer of • **RILPIVIRINE** (plasma concentration of rilpivirine possibly reduced)
- Anxiolytics and Hypnotics: St John's wort possibly reduces plasma concentration of **oral MIDAZOLAM**
- Aprepitant: avoidance of St John's wort advised by manufacturer of • **APREPITANT**
- Atomoxetine: possible increased risk of convulsions when antidepressants given with **ATOMOXETINE**
- Calcium-channel Blockers: St John's wort possibly reduces plasma concentration of **AMLODIPINE** and **FELODIPINE**; St John's wort reduces plasma concentration of **NIFEDIPINE**; St John's wort significantly reduces plasma concentration of • **VERAPAMIL**
- Cannabis Extract: St John's wort possibly reduces plasma concentration of • **CANNABIS EXTRACT**—manufacturer of cannabis extract advises avoid concomitant use
- Cardiac Glycosides: St John's wort reduces plasma concentration of • **DIGOXIN**—avoid concomitant use
- Ciclosporin: St John's wort reduces plasma concentration of • **CICLOSPORIN**—avoid concomitant use
- Cobicistat: St John's wort possibly reduces plasma concentration of • **COBICISTAT**—manufacturer of cobicistat advises avoid concomitant use
- Cytotoxics: St John's wort possibly reduces plasma concentration of **AXITINIB**—consider increasing dose of axitinib; St John's wort possibly reduces plasma concentration of **BORTEZOMIB**, • **BOSUTINIB**, **CABOZANTINIB**, **CRIZOTINIB**, **EVEROLIMUS**, • **IBRUTINIB**, • **IDELALISIB**, **PONATINIB** and • **VINFLUNINE**—manufacturer of bortezomib, bosutinib, cabozantinib, crizotinib, everolimus, ibrutinib, idelalisib, ponatinib and vinflunine advises avoid concomitant use; avoidance of St John's wort advised by manufacturer of • **CABAZITAXEL**, **DABRAFENIB**, **GEFITINIB**, • **LAPATINIB** and **VEMURAFENIB**; St John's wort reduces plasma concentration of • **IMATINIB**—avoid concomitant use; avoidance of St John's wort advised by manufacturer of **VANDETANIB** and • **VISMODEGIB** (plasma concentration of vandetanib and vismodegib possibly reduced); St John's wort possibly reduces plasma concentration of **ERIBULIN**; St John's wort accelerates metabolism of • **IRINOTECAN** (reduced plasma concentration—avoid concomitant use)
- Dapoxetine: possible increased risk of serotonergic effects when St John's wort given with • **DAPOXETINE** (manufacturer of dapoxetine advises St John's wort should not be started until 1 week after stopping dapoxetine, avoid dapoxetine for 2 weeks after stopping St John's wort)
- Diuretics: St John's wort reduces plasma concentration of • **EPLERENONE**—avoid concomitant use
- Fingolimod: St John's wort possibly reduces plasma concentration of **FINGOLIMOD**—manufacturer of fingolimod advises avoid concomitant use
- Fosaprepitant: avoidance of St John's wort advised by manufacturer of • **FOSAPREPITANT**
- Hormone Antagonists: St John's wort possibly reduces plasma concentration of • **ABIRATERONE**—manufacturer of abiraterone advises avoid concomitant use
- 5HT<sub>2</sub>-receptor Agonists: increased serotonergic effects when St John's wort given with • **5HT<sub>2</sub> AGONISTS**—avoid concomitant use
- Ivabradine: St John's wort reduces plasma concentration of **IVABRADINE**—avoid concomitant use
- Ivacaftor: St John's wort possibly reduces plasma concentration of • **IVACFTOR**—manufacturer of ivacaftor advises avoid concomitant use
- Lipid-regulating Drugs: St John's wort reduces plasma concentration of **SIMVASTATIN**
- Macitentan: avoidance of St John's wort advised by manufacturer of **MACITENTAN**
- Oestrogens: St John's wort reduces contraceptive effect of • **OESTROGENS** (avoid concomitant use)
- Progestogens: St John's wort reduces contraceptive effect of • **PROGESTOGENS** (avoid concomitant use)
- Tacrolimus: St John's wort reduces plasma concentration of • **TACROLIMUS**—avoid concomitant use



**St John's Wort** (continued)

- Theophylline: St John's wort possibly reduces plasma concentration of **THEOPHYLLINE**
- Ulcer-healing Drugs: St John's wort possibly reduces plasma concentration of **OMEPRAZOLE**
- Ulipristal: avoidance of St John's wort advised by manufacturer of ● **ULIPRISTAL** (contraceptive effect of ulipristal possibly reduced)

**Salbutamol** see Sympathomimetics, Beta<sub>2</sub>

**Salmeterol** see Sympathomimetics, Beta<sub>2</sub>

**Saquinavir**

- Analgesics: increased risk of ventricular arrhythmias when saquinavir given with ● **ALFENTANIL**, ● **FENTANYL** or ● **METHADONE**—avoid concomitant use
- Anti-arrhythmics: increased risk of ventricular arrhythmias when saquinavir given with ● **AMIODARONE**, ● **DISOPYRAMIDE**, ● **DRONEDARONE**, ● **FLECAINIDE**, ● **LIDOCAINE** or ● **PROPAFENONE**—avoid concomitant use
- Antibacterials: plasma concentration of both drugs possibly increased when saquinavir given with ● **CLARITHROMYCIN** (increased risk of ventricular arrhythmias); increased risk of ventricular arrhythmias when saquinavir given with ● **DAPSONE**, ● **ERYTHROMYCIN** or ● **MOXIFLOXACIN**—avoid concomitant use; saquinavir increases plasma concentration of ● **RIFABUTIN** (also plasma concentration of saquinavir reduced)—reduce rifabutin dose; plasma concentration of saquinavir significantly reduced by ● **RIFAMPICIN**, also risk of hepatotoxicity—avoid concomitant use; increased risk of ventricular arrhythmias when saquinavir given with ● **DELANAMID**; plasma concentration of both drugs may increase when saquinavir given with **FUSIDIC ACID**; avoidance of saquinavir advised by manufacturer of ● **TELITHROMYCIN** (risk of ventricular arrhythmias)
- Anticoagulants: saquinavir possibly enhances anticoagulant effect of **WARFARIN**; avoidance of saquinavir advised by manufacturer of **APIXABAN** and **RIVAROXABAN**
- Antidepressants: increased risk of ventricular arrhythmias when saquinavir given with ● **TRAZODONE** or ● **TRICYCLICS**—avoid concomitant use; plasma concentration of saquinavir reduced by ● **ST JOHN'S WORT**—avoid concomitant use
- Antiepileptics: plasma concentration of saquinavir possibly reduced by **CARBAMAZEPINE**, **FOSPHENYTOIN**, ● **PHENOBARBITAL**, **PHENYTOIN** and ● **PRIMIDONE**
- Antifungals: plasma concentration of saquinavir increased by ● **KETOCONAZOLE**—manufacturer of ketoconazole advises avoid concomitant use; plasma concentration of saquinavir possibly increased by **IMIDAZOLES** and **TRIAZOLES**
- Antihistamines: increased risk of ventricular arrhythmias when saquinavir given with ● **MIZOLASTINE**—avoid concomitant use
- Antimalarials: caution with saquinavir advised by manufacturer of **ARTEMETHER WITH LUMEFANTRINE**; avoidance of saquinavir advised by manufacturer of ● **ARTENIMOL WITH PIPERAQUINE** (possible risk of ventricular arrhythmias); increased risk of ventricular arrhythmias when saquinavir given with ● **QUININE**—avoid concomitant use
- Antimuscarinics: avoidance of saquinavir advised by manufacturer of **DARIFENACIN** and **TOLTERODINE**; manufacturer of fesoterodine advises dose reduction when saquinavir given with **FESOTERODINE**—consult fesoterodine product literature
- Antipsychotics: increased risk of ventricular arrhythmias when saquinavir given with ● **CLOZAPINE**, ● **HALOPERIDOL** or ● **PHENOTHIAZINES**—avoid concomitant use; saquinavir possibly increases plasma concentration of ● **ARIPIPRAZOLE** (reduce dose of aripiprazole—consult aripiprazole product literature); saquinavir possibly increases plasma concentration of ● **LURASIDONE**—avoid concomitant use; saquinavir possibly increases plasma concentration of ● **PIMOZIDE** (increased risk of ventricular arrhythmias—avoid concomitant use); saquinavir possibly increases plasma concentration of ● **QUETIAPINE**—manufacturer of quetiapine advises avoid concomitant use
- Antivirals: increased risk of ventricular arrhythmias when saquinavir given with ● **ATAZANAVIR** or ● **LOPINAVIR**—avoid concomitant use; saquinavir reduces plasma concentration of **DARUNAVIR**; plasma concentration of saquinavir significantly

**Saquinavir**

- Antivirals (continued)
  - reduced by **EFAVIRENZ**; plasma concentration of saquinavir increased by **INDINAVIR** and ● **RITONAVIR**; saquinavir increases plasma concentration of ● **MARAVIROC** (consider reducing dose of maraviroc); plasma concentration of saquinavir reduced by ● **TIPRANAVIR**
- Anxiolytics and Hypnotics: saquinavir increases plasma concentration of ● **MIDAZOLAM** (risk of prolonged sedation—avoid concomitant use of oral midazolam)
- Avanafil: saquinavir possibly increases plasma concentration of ● **AVANAFIL**—manufacturer of avanafil advises avoid concomitant use
- Beta-blockers: increased risk of ventricular arrhythmias when saquinavir given with ● **SOTALOL**—avoid concomitant use
- Ciclosporin: plasma concentration of both drugs increased when saquinavir given with ● **CICLOSPORIN**
- Corticosteroids: plasma concentration of saquinavir possibly reduced by **DEXAMETHASONE**
- Cytotoxics: saquinavir possibly increases the plasma concentration of **AFATINIB**—manufacturer of afatinib advises separating administration of saquinavir by 6 to 12 hours; saquinavir possibly increases plasma concentration of **AXITINIB** (reduce dose of axitinib—consult axitinib product literature); saquinavir possibly increases the plasma concentration of ● **BOSUTINIB** and ● **CABAZITAXEL**—manufacturer of bosutinib and cabazitaxel advises avoid or consider reducing dose of bosutinib and cabazitaxel; saquinavir possibly increases plasma concentration of ● **CRIZOTINIB** and ● **EVEROLIMUS**—manufacturer of crizotinib and everolimus advises avoid concomitant use; saquinavir possibly increases the plasma concentration of ● **IBRUTINIB**—reduce dose of ibrutinib (see under Ibrutinib, p. 809); avoidance of saquinavir advised by manufacturer of ● **LAPATINIB**; increased risk of ventricular arrhythmias when saquinavir given with ● **PAZOPANIB**—avoid concomitant use; saquinavir possibly increases plasma concentration of **PONATINIB**—consider reducing initial dose of ponatinib (see under Ponatinib, p. 814); manufacturer of ruxolitinib advises dose reduction when saquinavir given with ● **RUXOLITINIB**—consult ruxolitinib product literature; saquinavir possibly increases plasma concentration of ● **DOCETAXEL**—manufacturer of docetaxel advises avoid concomitant use or consider reducing docetaxel dose
- Dapoxetine: avoidance of saquinavir advised by manufacturer of ● **DAPOXETINE** (increased risk of toxicity)
- Diuretics: saquinavir increases plasma concentration of **EPLERENONE** (reduce dose of eplerenone)
- Domperidone: possible increased risk of ventricular arrhythmias when saquinavir given with ● **DOMPERIDONE**—avoid concomitant use
- Ergot Alkaloids: increased risk of ergotism when saquinavir given with ● **ERGOTAMINE**—avoid concomitant use
- Lipid-regulating Drugs: possible increased risk of myopathy when saquinavir given with **ATORVASTATIN**; possible increased risk of myopathy when saquinavir given with ● **ROSUVASTATIN**—manufacturer of rosuvastatin advises avoid concomitant use; increased risk of myopathy when saquinavir given with ● **SIMVASTATIN** (avoid concomitant use); avoidance of saquinavir advised by manufacturer of ● **LOMITAPIDE** (plasma concentration of lomitapide possibly increased)
- Orlistat: absorption of saquinavir possibly reduced by ● **ORLISTAT**
- Pentamidine Isetionate: increased risk of ventricular arrhythmias when saquinavir given with ● **PENTAMIDINE ISETIONATE**—avoid concomitant use
- Ranolazine: saquinavir possibly increases plasma concentration of ● **RANOLAZINE**—manufacturer of ranolazine advises avoid concomitant use
- Sildenafil: increased risk of ventricular arrhythmias when saquinavir given with ● **SILDENAFIL**—avoid concomitant use
- Tacrolimus: saquinavir increases plasma concentration of ● **TACROLIMUS** (consider reducing dose of tacrolimus)
- Tadalafil: increased risk of ventricular arrhythmias when saquinavir given with ● **TADALAFIL**—avoid concomitant use

**Saquinavir** (continued)

- Ulcer-healing Drugs: plasma concentration of saquinavir possibly increased by **CIMETIDINE**; plasma concentration of saquinavir possibly increased by **ESOMEPRAZOLE**, **LANSOPRAZOLE**, **PANTOPRAZOLE** and **RABEPRAZOLE**—manufacturer of saquinavir advises avoid concomitant use; plasma concentration of saquinavir increased by **OMEPRAZOLE**—manufacturer of saquinavir advises avoid concomitant use
- Vardenafil: increased risk of ventricular arrhythmias when saquinavir given with **• VARDENAFIL**—avoid concomitant use

**Saxagliptin** see Antidiabetics**Selegiline**

- NOTE** Selegiline is a MAO-B inhibitor
- Analgesics: hyperpyrexia and CNS toxicity reported when selegiline given with **• PETHIDINE** (avoid concomitant use); manufacturer of selegiline advises avoid concomitant use with **OPIOID ANALGESICS**
  - Antidepressants: manufacturer of selegiline advises avoid concomitant use with **CITALOPRAM** and **ESCITALOPRAM**; increased risk of hypertension and CNS excitation when selegiline given with **• FLUOXETINE** (selegiline should not be started until 5 weeks after stopping fluoxetine, avoid fluoxetine for 2 weeks after stopping selegiline); increased risk of hypertension and CNS excitation when selegiline given with **• FLUVOXAMINE**, **• SERTRALINE** or **• VENLAFAXINE** (selegiline should not be started until 1 week after stopping fluvoxamine, sertraline or venlafaxine, avoid fluvoxamine, sertraline or venlafaxine for 2 weeks after stopping selegiline); increased risk of hypertension and CNS excitation when selegiline given with **• PAROXETINE** (selegiline should not be started until 2 weeks after stopping paroxetine, avoid paroxetine for 2 weeks after stopping selegiline); enhanced hypotensive effect when selegiline given with **• MAOIS**—manufacturer of selegiline advises avoid concomitant use; avoid concomitant use of selegiline with **• MOCLOBEMIDE**; CNS toxicity reported when selegiline given with **• TRICYCLICS**
  - Dopaminergics: selegiline enhances effects and increases toxicity of **CO-BENELDOPA**, **CO-CARELDOPA** or **LEVODOPA** (reduce dose of co-beneldopa, co-careldopa or levodopa); max. dose of 10 mg selegiline advised by manufacturer of **ENTACAPONE** if used concomitantly
  - 5HT<sub>2</sub>-receptor Agonists: manufacturer of selegiline advises avoid concomitant use with **5HT<sub>2</sub> AGONISTS**
  - Memantine: effects of dopaminergics and selegiline possibly enhanced by **MEMANTINE**
  - Methyl dopa: antiparkinsonian effect of dopaminergics antagonised by **METHYLDOPA**
  - Oestrogens: plasma concentration of selegiline increased by **• OESTROGENS**—manufacturer of selegiline advises avoid concomitant use
  - Progestogens: plasma concentration of selegiline increased by **• PROGESTOGENS**—manufacturer of selegiline advises avoid concomitant use
  - Sympathomimetics: manufacturer of selegiline advises avoid concomitant use with **SYMPATHOMIMETICS**; risk of hypertensive crisis when selegiline given with **• DOPAMINE**

**Selenium**

- Eltrombopag: selenium possibly reduces absorption of **ELTROMBOPAG** (give at least 4 hours apart)
- Vitamins: absorption of selenium possibly reduced by **ASCORBIC ACID** (give at least 4 hours apart)

**Sertraline** see Antidepressants, SSRI**Sevelamer**

- Antibacterials: sevelamer reduces bioavailability of **CIPROFLOXACIN**
- Ciclosporin: sevelamer possibly reduces plasma concentration of **CICLOSPORIN**
- Mycophenolate: sevelamer possibly reduces plasma concentration of **MYCOPHENOLATE**
- Tacrolimus: sevelamer possibly reduces plasma concentration of **TACROLIMUS**
- Thyroid Hormones: sevelamer possibly reduces absorption of **LEVOTHYROXINE**

**Sevelamer** (continued)

- Vitamins: sevelamer reduces absorption of **CALCITRIOL** (give at least 1 hour before or 3 hours after sevelamer)

**Sevoflurane** see Anaesthetics, General**Sildenafil**

- Alpha-blockers: enhanced hypotensive effect when sildenafil given with **• ALPHA-BLOCKERS** (avoid alpha-blockers for 4 hours after sildenafil)—when patient is stable on the alpha blocker initiate sildenafil at the lowest possible dose
- Anti-arrhythmics: avoidance of sildenafil advised by manufacturer of **DISOPYRAMIDE** (risk of ventricular arrhythmias)
- Antibacterials: plasma concentration of sildenafil increased by **• CLARITHROMYCIN**—consider reducing initial dose of sildenafil for erectile dysfunction or reduce sildenafil dose frequency to once daily for pulmonary hypertension; plasma concentration of sildenafil increased by **ERYTHROMYCIN**—reduce initial dose of sildenafil for erectile dysfunction or reduce sildenafil dose frequency to twice daily for pulmonary hypertension; plasma concentration of sildenafil possibly increased by **• TELITHROMYCIN**—consider reducing initial dose of sildenafil for erectile dysfunction or reduce sildenafil dose frequency to once daily for pulmonary hypertension
- Antifungals: plasma concentration of sildenafil increased by **• KETOCONAZOLE**—reduce initial dose of sildenafil for erectile dysfunction and avoid concomitant use of sildenafil for pulmonary hypertension; plasma concentration of sildenafil increased by **• ITRACONAZOLE**—reduce initial dose of sildenafil
- Antivirals: side-effects of sildenafil possibly increased by **• ATAZANAVIR**; plasma concentration of sildenafil reduced by **• ETRAVIRINE**; plasma concentration of sildenafil possibly increased by **• FOSAMPRENAVIR**; plasma concentration of sildenafil increased by **• INDIRANAVIR**—reduce initial dose of sildenafil; plasma concentration of sildenafil significantly increased by **• RITONAVIR**—avoid concomitant use; increased risk of ventricular arrhythmias when sildenafil given with **• SAQUINAVIR**—avoid concomitant use; avoidance of sildenafil advised by manufacturer of **• TELAPREVIR**; avoidance of sildenafil for pulmonary arterial hypertension advised by manufacturer of **TIPRANAVIR**
- Bosentan: plasma concentration of sildenafil reduced by **• BOSENTAN**, also plasma concentration of bosentan increased
- Calcium-channel Blockers: enhanced hypotensive effect when sildenafil given with **• AMLODIPINE**
- Cobicistat: plasma concentration of sildenafil possibly increased by **• COBICISTAT**—manufacturer of cobicistat advises avoid concomitant use of sildenafil for pulmonary arterial hypertension or reduce dose of sildenafil for erectile dysfunction—consult cobicistat product literature
- Cytotoxics: avoidance of sildenafil for pulmonary arterial hypertension advised by manufacturer of **• IDELALISIB**
- Dapoxetine: avoidance of sildenafil advised by manufacturer of **• DAPOXETINE**
- Grapefruit Juice: plasma concentration of sildenafil possibly increased by **• GRAPEFRUIT JUICE**
- Nicorandil: sildenafil significantly enhances hypotensive effect of **• NICORANDIL** (avoid concomitant use)
- Nitrates: sildenafil significantly enhances hypotensive effect of **• NITRATES** (avoid concomitant use)
- Riociguat: enhanced hypotensive effect when sildenafil given with **• RIOICIGUAT**—avoid concomitant use
- Ulcer-healing Drugs: plasma concentration of sildenafil increased by **• CIMETIDINE**—consider reducing dose of sildenafil for erectile dysfunction

**Siltuximab**

- Antipsychotics: avoid concomitant use of cytotoxics with **• CLOZAPINE** (increased risk of agranulocytosis)
- Vaccines: risk of generalised infections when monoclonal antibodies given with live **• VACCINES**—avoid concomitant use

**Simeprevir**

- Anti-arrhythmics: possible increased risk of bradycardia when simeprevir (with sofosbuvir) given with **• AMIODARONE**—see under Amiodarone, p. 88
- Antibacterials: plasma concentration of simeprevir possibly increased by **• CLARITHROMYCIN** and **• TELITHROMYCIN**—

**Simeprevir**

- **Antibacterials** (continued)
  - manufacturer of simeprevir advises avoid concomitant use; plasma concentration of both drugs increased when simeprevir given with ● **ERYTHROMYCIN**—manufacturer of simeprevir advises avoid concomitant use; plasma concentration of simeprevir possibly reduced by **RIFABUTIN**—manufacturer of simeprevir advises avoid concomitant use; plasma concentration of simeprevir reduced by ● **RIFAMPICIN**—manufacturer of simeprevir advises avoid concomitant use
- **Antidepressants**: plasma concentration of simeprevir possibly reduced by ● **ST JOHN'S WORT**—manufacturer of simeprevir advises avoid concomitant use
- **Antiepileptics**: plasma concentration of simeprevir possibly reduced by ● **CARBAMAZEPINE**, ● **FOSPHENYTOIN**, ● **OXCARBAZEPINE**, ● **PHENOBARBITAL**, ● **PHENYTOIN** and ● **PRIMIDONE**—manufacturer of simeprevir advises avoid concomitant use
- **Antifungals**: manufacturer of simeprevir advises avoid concomitant use with ● **KETOCONAZOLE**; plasma concentration of simeprevir possibly increased by ● **FLUCONAZOLE**, ● **ITRACONAZOLE**, ● **POSACONAZOLE** and ● **VORICONAZOLE**—manufacturer of simeprevir advises avoid concomitant use
- **Antivirals**: plasma concentration of both drugs increased when simeprevir given with ● **DARUNAVIR**—manufacturer of simeprevir advises avoid concomitant use; plasma concentration of simeprevir reduced by **EFAVIRENZ**; manufacturer of simeprevir advises avoid concomitant use with **ETRAVIRINE**; plasma concentration of simeprevir possibly reduced by ● **NEVIRAPINE**—manufacturer of simeprevir advises avoid concomitant use; plasma concentration of simeprevir increased by ● **RITONAVIR**—manufacturer of simeprevir advises avoid concomitant use
- **Anxiolytics and Hypnotics**: simeprevir increases plasma concentration of *oral* **MIDAZOLAM**
- **Cardiac Glycosides**: simeprevir increases plasma concentration of **DIGOXIN**
- **Cobicistat**: plasma concentration of simeprevir possibly increased by ● **COBICISTAT**—manufacturer of simeprevir advises avoid concomitant use
- **Corticosteroids**: plasma concentration of simeprevir possibly reduced by **DEXAMETHASONE**—manufacturer of simeprevir advises avoid concomitant use
- **Lipid-regulating Drugs**: simeprevir increases plasma concentration of **ATORVASTATIN**, **ROSUVASTATIN** and **SIMVASTATIN** (consider reducing dose of atorvastatin, rosuvastatin and simvastatin)

**Simvastatin** see Statins

**Sirolimus**

- **Anti-arrhythmics**: caution with sirolimus advised by manufacturer of **DRONEDARONE**
- **Antibacterials**: plasma concentration of sirolimus increased by ● **CLARITHROMYCIN** and ● **TELITHROMYCIN**—avoid concomitant use; plasma concentration of both drugs increased when sirolimus given with ● **ERYTHROMYCIN**; plasma concentration of sirolimus reduced by ● **RIFABUTIN** and ● **RIFAMPICIN**—avoid concomitant use
- **Antifungals**: plasma concentration of sirolimus increased by ● **ITRACONAZOLE**, ● **KETOCONAZOLE** and ● **VORICONAZOLE**—avoid concomitant use; plasma concentration of sirolimus increased by **MICAFUNGIN** and ● **MICONAZOLE**; plasma concentration of sirolimus possibly increased by **FLUCONAZOLE** and **POSACONAZOLE**
- **Antivirals**: plasma concentration of sirolimus possibly increased by ● **ATAZANAVIR** and **LOPINAVIR**; plasma concentration of sirolimus increased by ● **BOCEPREVIR** (increased risk of toxicity—reduce sirolimus dose); plasma concentration of both drugs increased when sirolimus given with ● **TELAPREVIR** (reduce dose of sirolimus)
- **Calcium-channel Blockers**: plasma concentration of sirolimus possibly increased by ● **NICARDIPINE**; plasma concentration of sirolimus increased by ● **DILTIAZEM**; plasma concentration of both drugs increased when sirolimus given with ● **VERAPAMIL**

**Sirolimus** (continued)

- **Ciclosporin**: plasma concentration of sirolimus increased by **CICLOSPORIN**
- **Cytotoxics**: caution with sirolimus advised by manufacturer of ● **CRIZOTINIB**
- **Grapefruit Juice**: plasma concentration of sirolimus increased by ● **GRAPEFRUIT JUICE**—avoid concomitant use

**Sitagliptin** see Antidiabetics

**Smallpox Vaccine** see Vaccines

**Sodium Aurothiomalate**

- **ACE Inhibitors**: flushing and hypotension reported when sodium aurothiomalate given with ● **ACE INHIBITORS**
- **Penicillamine**: avoidance of sodium aurothiomalate advised by manufacturer of **PENICILLAMINE** (increased risk of toxicity)

**Sodium Benzoate**

- **Antiepileptics**: effects of sodium benzoate possibly reduced by **SODIUM VALPROATE** and **VALPROIC ACID**
- **Antipsychotics**: effects of sodium benzoate possibly reduced by **HALOPERIDOL**
- **Corticosteroids**: effects of sodium benzoate possibly reduced by **CORTICOSTEROIDS**

**Sodium Bicarbonate** see Antacids

**Sodium Citrate**

- **Antibacterials**: avoid concomitant use of sodium citrate with **METHENAMINE**
- **Ulcer-healing Drugs**: avoidance of sodium citrate advised by manufacturer of **SUCRALFATE**

**Sodium Clodronate** see Bisphosphonates

**Sodium Ferredate** see Iron salts

**Sodium Nitroprusside** see Vasodilator Antihypertensives

**Sodium Oxybate**

- **Analgesics**: effects of sodium oxybate enhanced by ● **OPIOID ANALGESICS** (avoid concomitant use)
- **Antidepressants**: increased risk of side-effects when sodium oxybate given with **TRICYCLICS**
- **Antiepileptics**: manufacturer of sodium oxybate advises avoid concomitant use with **PHENOBARBITAL** and **PRIMIDONE**; plasma concentration of sodium oxybate increased by ● **SODIUM VALPROATE** and ● **VALPROIC ACID** (see under Sodium Oxybate, p. 425)
- **Antipsychotics**: effects of sodium oxybate possibly enhanced by **ANTIPSYCHOTICS**
- **Anxiolytics and Hypnotics**: effects of sodium oxybate enhanced by ● **BENZODIAZEPINES** (avoid concomitant use)

**Sodium Phenylbutyrate**

- **Antiepileptics**: effects of sodium phenylbutyrate possibly reduced by **SODIUM VALPROATE** and **VALPROIC ACID**
- **Antipsychotics**: effects of sodium phenylbutyrate possibly reduced by **HALOPERIDOL**
- **Corticosteroids**: effects of sodium phenylbutyrate possibly reduced by **CORTICOSTEROIDS**

**Sodium Stibogluconate**

- **Antifungals**: possible increased risk of arrhythmias when sodium stibogluconate given before ● **AMPHOTERICIN**—manufacturer of sodium stibogluconate advises giving 14 days apart

**Sodium Valproate**

- **Analgesics**: effects of sodium valproate enhanced by **ASPIRIN**
- **Antibacterials**: metabolism of sodium valproate possibly inhibited by **ERYTHROMYCIN** (increased plasma concentration); avoidance of sodium valproate advised by manufacturer of ● **PIVMECILLINAM**; plasma concentration of sodium valproate reduced by ● **CARBAPENEMS**—avoid concomitant use
- **Anticoagulants**: sodium valproate possibly enhances anticoagulant effect of **COUMARINS**
- **Antidepressants**: anticonvulsant effect of antiepileptics possibly antagonised by **MAOIs** and ● **TRICYCLIC-RELATED ANTIDEPRESSANTS** (convulsive threshold lowered); anticonvulsant effect of antiepileptics antagonised by ● **SSRIS** and ● **TRICYCLICS** (convulsive threshold lowered)
- **Antiepileptics**: plasma concentration of sodium valproate reduced by **CARBAMAZEPINE**, also plasma concentration of active metabolite of carbamazepine increased; sodium valproate possibly increases plasma concentration of **ETHOSUXIMIDE**; sodium valproate increases or possibly

**Sodium Valproate**

- Antiepileptics (continued)
  - decreases plasma concentration of **FOSPHENYTOIN** and **PHENYTOIN**, also plasma concentration of sodium valproate reduced; sodium valproate increases plasma concentration of
    - **LAMOTRIGINE** (increased risk of toxicity—reduce lamotrigine dose); sodium valproate sometimes reduces plasma concentration of an active metabolite of **OXCARBAZEPINE**;
  - sodium valproate increases plasma concentration of **PHENOBARBITAL** and **PRIMIDONE** (also plasma concentration of sodium valproate reduced); sodium valproate possibly increases plasma concentration of **RUFINAMIDE** (reduce dose of rufinamide); hyperammonaemia and CNS toxicity reported when sodium valproate given with **TOPIRAMATE**
- Antimalarials: anticonvulsant effect of antiepileptics antagonised by
  - **MEFLOQUINE**
- Antipsychotics: anticonvulsant effect of antiepileptics antagonised by
  - **ANTIPSYCHOTICS** (convulsive threshold lowered); sodium valproate possibly increases or decreases plasma concentration of **CLOZAPINE**; increased risk of side-effects including neutropenia when sodium valproate given with
    - **OLANZAPINE**
- ▶ Antivirals: plasma concentration of sodium valproate possibly reduced by **RITONAVIR**; sodium valproate possibly increases plasma concentration of **ZIDOVUDINE** (increased risk of toxicity)
- ▶ Anxiolytics and Hypnotics: plasma concentration of sodium valproate possibly increased by **CLOBAZAM**; increased risk of side-effects when sodium valproate given with **CLONAZEPAM**; sodium valproate possibly increases plasma concentration of **DIAZEPAM** and **LORAZEPAM**
- ▶ Bupropion: sodium valproate inhibits the metabolism of **BUPROPION**
- ▶ Cytotoxics: sodium valproate increases plasma concentration of **TEMOZOLOMIDE**
- ▶ Lipid-regulating Drugs: absorption of sodium valproate possibly reduced by **COLESTYRAMINE**
- ▶ Oestrogens: plasma concentration of sodium valproate possibly reduced by **ETHINYLESTRADIOL**
- Orlistat: possible increased risk of convulsions when antiepileptics given with
  - **ORLISTAT**
- ▶ Sodium Benzoate: sodium valproate possibly reduces effects of **SODIUM BENZOATE**
- Sodium Oxybate: sodium valproate increases the plasma concentration of
  - **SODIUM OXYBATE** (see under Sodium Oxybate, p. 425)
- ▶ Sodium Phenylbutyrate: sodium valproate possibly reduces effects of **SODIUM PHENYLBUTYRATE**
- Ulcer-healing Drugs: metabolism of sodium valproate inhibited by
  - **CIMETIDINE** (increased plasma concentration)

**Sofosbuvir**

- Anti-arrhythmics: possible increased risk of bradycardia when sofosbuvir given with
  - **AMIODARONE**—see under Amiodarone, p. 88
- ▶ Antibacterials: manufacturer of sofosbuvir advises avoid concomitant use with **RIFABUTIN** and **RIFAMPICIN**
- ▶ Antidepressants: manufacturer of sofosbuvir advises avoid concomitant use with **ST JOHN'S WORT**
- ▶ Antiepileptics: manufacturer of sofosbuvir advises avoid concomitant use with **CARBAMAZEPINE**, **FOSPHENYTOIN**, **OXCARBAZEPINE**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**

**Solfenacin** see Antimuscarinics

**Somatropin**

- ▶ Corticosteroids: growth-promoting effect of somatropin may be inhibited by **CORTICOSTEROIDS**
- ▶ Oestrogens: increased doses of somatropin may be needed when given with **OESTROGENS** (when used as oral replacement therapy)

**Sorafenib**

- ▶ Antibacterials: bioavailability of sorafenib reduced by **NEOMYCIN**; plasma concentration of sorafenib reduced by **RIFAMPICIN**
- Anticoagulants: sorafenib possibly enhances anticoagulant effect of
  - **COUMARINS**

**Sorafenib** (continued)

- Antipsychotics: avoid concomitant use of cytotoxics with
    - **CLOZAPINE** (increased risk of agranulocytosis)
  - Antivirals: avoidance of sorafenib advised by manufacturer of
    - **BOCEPREVIR**
  - ▶ Cytotoxics: sorafenib increases plasma concentration of **DOCETAXEL** and **DOXORUBICIN**; sorafenib possibly increases plasma concentration of **IRINOTECAN**
- Sotalol** see Beta-blockers
- Spirinolactone** see Diuretics
- Statins**
- ▶ Antacids: absorption of rosuvastatin reduced by **ANTACIDS**
  - Anti-arrhythmics: increased risk of myopathy when simvastatin given with
    - **AMIODARONE** (see under Simvastatin, p. 181); plasma concentration of rosuvastatin increased by
      - **DRONEDARONE**—adjust dose of rosuvastatin (consult product literature); increased risk of myopathy when simvastatin given with
        - **DRONEDARONE**; plasma concentration of atorvastatin possibly increased by **DRONEDARONE**
  - Antibacterials: plasma concentration of atorvastatin and pravastatin increased by
    - **CLARITHROMYCIN**; increased risk of myopathy when simvastatin given with
      - **CLARITHROMYCIN**,
      - **ERYTHROMYCIN** or • **TELITHROMYCIN** (avoid concomitant use); plasma concentration of rosuvastatin reduced by **ERYTHROMYCIN**; possible increased risk of myopathy when atorvastatin given with **ERYTHROMYCIN**; plasma concentration of pravastatin increased by **ERYTHROMYCIN**; plasma concentration of atorvastatin and simvastatin possibly reduced by **RIFAMPICIN**; metabolism of fluvastatin accelerated by **RIFAMPICIN** (reduced effect); increased risk of myopathy when statins given with
        - **DAPTOMYCIN** (preferably avoid concomitant use); risk of myopathy and rhabdomyolysis when statins given with
          - **FUSIDIC ACID**—avoid concomitant use and for 7 days after last fusidic acid dose; increased risk of myopathy when atorvastatin given with
            - **TELITHROMYCIN** (avoid concomitant use); possible increased risk of myopathy when pravastatin given with **TELITHROMYCIN**
    - Anticoagulants: atorvastatin may transiently reduce anticoagulant effect of **WARFARIN**; rosuvastatin possibly enhances anticoagulant effect of
      - **COUMARINS** and
      - **PHENINDIONE**; simvastatin can enhance the anticoagulant effect of **COUMARINS**; fluvastatin enhances anticoagulant effect of
        - **COUMARINS**
    - ▶ Antidepressants: plasma concentration of simvastatin reduced by **ST JOHN'S WORT**
    - ▶ Antidiabetics: fluvastatin possibly increases plasma concentration of **GLIBENCLAMIDE**
    - Antiepileptics: plasma concentration of simvastatin reduced by
      - **CARBAMAZEPINE** and **ESLICARBAZEPINE**—consider increasing dose of simvastatin; plasma concentration of rosuvastatin reduced by **ESLICARBAZEPINE**; combination of fluvastatin with **FOSPHENYTOIN** or **PHENYTOIN** may increase plasma concentration of either drug (or both)
    - Antifungals: possible increased risk of myopathy when atorvastatin given with
      - **KETOCONAZOLE**—manufacturer of ketoconazole advises avoid concomitant use; increased risk of myopathy when simvastatin given with
        - **ITRACONAZOLE**,
        - **KETOCONAZOLE** or • **POSACONAZOLE** (avoid concomitant use); possible increased risk of myopathy when simvastatin given with
          - **FLUCONAZOLE** or • **MICONAZOLE**; possible increased risk of myopathy when atorvastatin given with
            - **FLUCONAZOLE** or **IMIDAZOLES**; plasma concentration of fluvastatin increased by **FLUCONAZOLE**—possible increased risk of myopathy; plasma concentration of rosuvastatin increased by
              - **ITRACONAZOLE**—adjust dose of rosuvastatin (consult product literature); increased risk of myopathy when atorvastatin given with
                - **ITRACONAZOLE**, • **POSACONAZOLE** or • **VORICONAZOLE**;
        - ▶ Antivirals: possible increased risk of myopathy when atorvastatin or pravastatin given with
          - **ATAZANAVIR**; plasma concentration of rosuvastatin increased by
            - **ATAZANAVIR**,
            - **DARUNAVIR**, • **LOPINAVIR** and • **TIPRANAVIR**—adjust dose of rosuvastatin (consult product literature); increased risk of myopathy when simvastatin given with
              - **ATAZANAVIR**,



## Statins

- Antivirals (continued)
  - **INDINAVIR**, • **RITONAVIR** or • **SAQUINAVIR** (avoid concomitant use); plasma concentration of pravastatin increased by **BOCEPREVIR**; plasma concentration of atorvastatin increased by **BOCEPREVIR** (reduce dose of atorvastatin); manufacturers advise avoid concomitant use of simvastatin with
    - **BOCEPREVIR** and • **TELAPREVIR**; plasma concentration of rosuvastatin increased by **DACLATASVIR**; plasma concentration of pravastatin possibly increased by **DARUNAVIR**; possible increased risk of myopathy when atorvastatin given with **DARUNAVIR**, **FOSAMPRENAVIR**, **INDINAVIR**, **LOPINAVIR**, **RITONAVIR** or **SAQUINAVIR**; plasma concentration of atorvastatin, pravastatin and simvastatin reduced by **EFAVIRENZ**; plasma concentration of atorvastatin possibly reduced by **ETRAVIRINE**; possible increased risk of myopathy when rosuvastatin given with • **FOSAMPRENAVIR**, • **INDINAVIR**, • **RITONAVIR** and • **SAQUINAVIR**—manufacturer of rosuvastatin advises avoid concomitant use; possible increased risk of myopathy when simvastatin given with • **FOSAMPRENAVIR** or • **LOPINAVIR**—avoid concomitant use; plasma concentration of atorvastatin, rosuvastatin and simvastatin increased by **SIMEPREVIR** (consider reducing dose of atorvastatin, rosuvastatin and simvastatin); avoidance of atorvastatin advised by manufacturer of • **TELAPREVIR**; plasma concentration of simvastatin possibly increased by • **TIPRANAVIR**—avoid concomitant use; increased risk of myopathy when atorvastatin given with • **TIPRANAVIR** (see under Atorvastatin, p. 179)
  - Anxiolytics and Hypnotics: atorvastatin possibly increases plasma concentration of **MIDAZOLAM**
  - Bosentan: plasma concentration of simvastatin reduced by **BOSENTAN**
  - Calcium-channel Blockers: possible increased risk of myopathy when simvastatin given with • **AMLODIPINE** and • **DILTIAZEM** (see under Simvastatin, p. 181); plasma concentration of atorvastatin increased by **DILTIAZEM**—possible increased risk of myopathy; increased risk of myopathy when simvastatin given with • **VERAPAMIL** (see under Simvastatin, p. 181); atorvastatin increases plasma concentration of • **VERAPAMIL**, also possible increased risk of myopathy (consider reducing dose of atorvastatin)
  - Cardiac Glycosides: atorvastatin possibly increases plasma concentration of **DIGOXIN**
  - Ciclosporin: increased risk of myopathy when rosuvastatin or simvastatin given with • **CICLOSPORIN** (avoid concomitant use); increased risk of myopathy when atorvastatin given with • **CICLOSPORIN** (see under Atorvastatin, p. 179); increased risk of myopathy when fluvastatin or pravastatin given with • **CICLOSPORIN**
  - Clopidogrel: plasma concentration of rosuvastatin increased by • **CLOPIDOGREL**—adjust dose of rosuvastatin (consult product literature)
  - Cobicistat: plasma concentration of atorvastatin possibly increased by **COBICISTAT**—manufacturer of cobicistat advises reduce dose of atorvastatin; avoidance of simvastatin advised by manufacturer of • **COBICISTAT**
  - Colchicine: possible increased risk of myopathy when statins given with • **COLCHICINE**
  - Cytotoxics: plasma concentration of simvastatin possibly increased by **DASATINIB**; avoidance of simvastatin advised by manufacturer of **IDELALISIB**; plasma concentration of simvastatin increased by **IMATINIB**
  - Eltrombopag: plasma concentration of rosuvastatin increased by • **ELTROMBOPAG**—adjust dose of rosuvastatin (consult product literature)
  - Grapefruit Juice: plasma concentration of atorvastatin possibly increased by **GRAPEFRUIT JUICE**; plasma concentration of simvastatin increased by • **GRAPEFRUIT JUICE**—avoid concomitant use
  - Hormone Antagonists: possible increased risk of myopathy when simvastatin given with • **DANAZOL**—avoid concomitant use
  - Lipid-regulating Drugs: possible increased risk of myopathy when simvastatin given with • **BEZAFIBRATE** (see under Simvastatin, p. 181); possible increased risk of myopathy

## Statins

- Lipid-regulating Drugs (continued)
  - when simvastatin given with • **CIPROFIBRATE** (see under Simvastatin, p. 181); when given with statins reduce maximum dose of **FENOFIBRATE**—see under Fenofibrate, p. 175; increased risk of myopathy when atorvastatin, fluvastatin or pravastatin given with • **GEMFIBROZIL** (preferably avoid concomitant use); increased risk of myopathy when simvastatin given with • **GEMFIBROZIL** (avoid concomitant use); plasma concentration of rosuvastatin increased by • **EZETIMIBE**—adjust dose of rosuvastatin (consult product literature); increased risk of myopathy when statins given with • **FIBRATES**; increased risk of myopathy when rosuvastatin given with • **FIBRATES** (see under Rosuvastatin, p. 180); plasma concentration of simvastatin increased by • **LOMITAPIDE** (see under Simvastatin, p. 181); plasma concentration of atorvastatin increased by **LOMITAPIDE**—manufacturer of lomitapide advises reduce dose of atorvastatin by half or separate administration by 12 hours; increased risk of myopathy when statins given with • **NICOTINIC ACID** (applies to lipid regulating doses of nicotinic acid)
  - Oestrogens: atorvastatin and rosuvastatin increase plasma concentration of **ETHINYLESTRADIOL**
  - Progestogens: atorvastatin increases plasma concentration of **NORETHISTERONE**; rosuvastatin increases plasma concentration of active metabolite of **NORGESTIMATE**; rosuvastatin increases plasma concentration of **NORGESTREL**
  - Ranolazine: plasma concentration of simvastatin increased by • **RANOLAZINE** (see under Simvastatin, p. 181)
  - Retinoids: plasma concentration of simvastatin reduced by **ALITRETINOIN**
  - Teriflunomide: plasma concentration of rosuvastatin increased by • **TERIFLUNOMIDE** (consider reducing dose of rosuvastatin)
  - Ticagrelor: plasma concentration of simvastatin increased by • **TICAGRELOR** (increased risk of toxicity)

## Stavudine

- Antivirals: increased risk of side-effects when stavudine given with • **DIDANOSINE**; increased risk of toxicity when stavudine given with • **RIBAVIRIN**; effects of stavudine possibly inhibited by • **ZIDOVUDINE** (manufacturers advise avoid concomitant use)
- Cytotoxics: effects of stavudine possibly inhibited by **DOXORUBICIN**; increased risk of toxicity when stavudine given with • **HYDROXYCARBAMIDE**—avoid concomitant use
- Orlistat: absorption of stavudine possibly reduced by • **ORLISTAT**

## Stiripentol

- Antidepressants: anticonvulsant effect of antiepileptics possibly antagonised by **MAOIS** and • **TRICYCLIC-RELATED ANTIDEPRESSANTS** (convulsive threshold lowered); anticonvulsant effect of antiepileptics antagonised by • **SSRIS** and • **TRICYCLICS** (convulsive threshold lowered)
- Antiepileptics: stiripentol increases plasma concentration of • **CARBAMAZEPINE**, • **FOSPHENYTOIN**, • **PHENOBARBITAL**, • **PHENYTOIN** and • **PRIMIDONE**
- Antimalarials: anticonvulsant effect of antiepileptics antagonised by • **MEFLOQUINE**
- Antipsychotics: anticonvulsant effect of antiepileptics antagonised by • **ANTIPSYCHOTICS** (convulsive threshold lowered)
- Anxiolytics and Hypnotics: stiripentol increases plasma concentration of **CLOBAZAM**
- Orlistat: possible increased risk of convulsions when antiepileptics given with • **ORLISTAT**

**Streptomycin** see Aminoglycosides

## Strontium Ranelate

- Antibacterials: strontium ranelate reduces absorption of **QUINOLONES** and **TETRACYCLINES** (manufacturer of strontium ranelate advises avoid concomitant use)

## Sucralfate

- Aminophylline: sucralfate possibly reduces absorption of **AMINOPHYLLINE** (give at least 2 hours apart)
- Antibacterials: sucralfate reduces absorption of **CIPROFLOXACIN**, **LEVOFLOXACIN**, **MOXIFLOXACIN**, **OFLOXACIN** and **TETRACYCLINES**;

**Sucralfate**

- Antibacterials (continued)  
sucralfate reduces absorption of **NORFLOXACIN** (give at least 2 hours apart)
- Anticoagulants: sucralfate possibly reduces absorption of
  - **COUMARINS** (reduced anticoagulant effect)
- Antiepileptics: sucralfate reduces absorption of ● **FOSPHENYTOIN** and ● **PHENYTOIN**
- Antifungals: sucralfate reduces absorption of **KETOCONAZOLE**
- Antipsychotics: sucralfate reduces absorption of **SULPIRIDE**
- Cardiac Glycosides: sucralfate possibly reduces absorption of **CARDIAC GLYCOSIDES**
- Potassium Salts: manufacturer of sucralfate advises avoid concomitant use with **POTASSIUM CITRATE**
- Sodium Citrate: manufacturer of sucralfate advises avoid concomitant use with **SODIUM CITRATE**
- Theophylline: sucralfate possibly reduces absorption of **THEOPHYLLINE** (give at least 2 hours apart)
- Thyroid Hormones: sucralfate reduces absorption of **LEVOTHYROXINE**
- Ulcer-healing Drugs: sucralfate possibly reduces absorption of **LANSOPRAZOLE**

**Sugammadex**

- Antibacterials: response to sugammadex possibly reduced by **FUSIDIC ACID**
- Progestogens: sugammadex possibly reduces plasma concentration of **PROGESTOGENS**—manufacturer of sugammadex advises additional contraceptive precautions

**Sulfadiazine** see Sulfonamides

**Sulfadoxine** see Sulfonamides

**Sulfamethoxazole** see Sulfonamides

**Sulfasalazine**

- Cardiac Glycosides: sulfasalazine possibly reduces absorption of **DIGOXIN**
- Folates: sulfasalazine possibly reduces absorption of **FOLIC ACID**

**Sulfipyrazone**

- Aminophylline: sulfipyrazone reduces plasma concentration of **AMINOPHYLLINE**
- Analgesics: effects of sulfipyrazone antagonised by **ASPIRIN**
- Antibacterials: sulfipyrazone reduces excretion of **NITROFURANTOIN** (increased risk of toxicity); sulfipyrazone reduces excretion of **PENICILLINS**; effects of sulfipyrazone antagonised by **PYRAZINAMIDE**
- Anticoagulants: increased risk of bleeding when sulfipyrazone given with **APIXABAN**; sulfipyrazone enhances anticoagulant effect of ● **COUMARINS**; possible increased risk of bleeding when sulfipyrazone given with ● **DABIGATRAN**

- Antidiabetics: sulfipyrazone enhances effects of
  - **SULFONYLUREAS**

- Antiepileptics: sulfipyrazone increases plasma concentration of ● **FOSPHENYTOIN** and ● **PHENYTOIN**

- Calcium-channel Blockers: sulfipyrazone reduces plasma concentration of **VERAPAMIL**

- Ciclosporin: sulfipyrazone reduces plasma concentration of ● **CICLOSPORIN**

- Theophylline: sulfipyrazone reduces plasma concentration of **THEOPHYLLINE**

**Sulfonamides**

- Anaesthetics, General: sulfonamides enhance effects of **THIOPTENTAL**
- Anaesthetics, Local: effects of sulfonamides possibly inhibited by ● **CHLOROPROCAINE** (manufacturer of chloroprocaine advises avoid concomitant use); increased risk of methaemoglobinemia when sulfonamides given with **PRILOCAINE**
- Anti-arrhythmics: possible increased risk of ventricular arrhythmias when sulfamethoxazole (as co-trimoxazole) given with **AMIODARONE**—manufacturer of amiodarone advises avoid concomitant use of co-trimoxazole
- Antibacterials: increased risk of crystalluria when sulfonamides given with ● **METHENAMINE**

**Sulfonamides (continued)**

- Anticoagulants: sulfonamides enhance anticoagulant effect of ● **COUMARINS**; sulfonamides possibly inhibit metabolism of **PHENINDIONE**
- Antidiabetics: sulfonamides rarely enhance the effects of **SULFONYLUREAS**
- Antiepileptics: sulfonamides possibly increase plasma concentration of **FOSPHENYTOIN** and **PHENYTOIN**
- Antimalarials: increased antifolate effect when sulfonamides given with ● **PYRIMETHAMINE**
- Antipsychotics: avoid concomitant use of sulfonamides with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Azathioprine: increased risk of haematological toxicity when sulfamethoxazole (as co-trimoxazole) given with ● **AZATHIOPRINE**
- Ciclosporin: increased risk of nephrotoxicity when sulfonamides given with ● **CICLOSPORIN**; sulfadiazine possibly reduces plasma concentration of ● **CICLOSPORIN**
- Cytotoxics: increased risk of haematological toxicity when sulfamethoxazole (as co-trimoxazole) given with ● **MERCAPTOPURINE** or ● **METHOTREXATE**; sulfonamides increase risk of **METHOTREXATE** toxicity
- Potassium Aminobenzoate: effects of sulfonamides inhibited by **POTASSIUM AMINO BENZOATE**
- Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Sulfonylureas** see Antidiabetics

**Sulindac** see NSAIDs

**Sulpiride** see Antipsychotics

**Sumatriptan** see 5HT<sub>1</sub>-receptor Agonists (under HT)

**Sunitinib**

- Antibacterials: metabolism of sunitinib accelerated by **RIFAMPICIN** (reduced plasma concentration)
- Antifungals: metabolism of sunitinib inhibited by **KETOCONAZOLE** (increased plasma concentration)
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Antivirals: avoidance of sunitinib advised by manufacturer of ● **BOCEPREVIR**

**Suxamethonium** see Muscle Relaxants

**Sympathomimetics**

- Adrenergic Neurone Blockers: ephedrine, isometheptene, metaraminol, methylphenidate, noradrenaline (norepinephrine), oxymetazoline, phenylephrine, pseudoephedrine and xylometazoline antagonise hypotensive effect of ● **ADRENERGIC NEURONE BLOCKERS**; dexafetamine and lisdexafetamine antagonise hypotensive effect of ● **GUANETHIDINE**; increased risk of hypertension when adrenaline (epinephrine) given with ● **GUANETHIDINE**
- Alcohol: effects of methylphenidate possibly enhanced by **ALCOHOL**
- Alpha<sub>2</sub>-adrenoceptor Stimulants: avoidance of sympathomimetics advised by manufacturer of **APRACLOINIDINE**
- Alpha-blockers: avoid concomitant use of adrenaline (epinephrine) or dopamine with ● **TOLAZOLINE**
- Aminophylline: avoidance of ephedrine in children advised by manufacturer of **AMINOPHYLLINE**
- Anaesthetics, General: avoidance of sympathomimetics advised by manufacturer of ● **ISOFLURANE** (risk of ventricular arrhythmias); increased risk of arrhythmias when adrenaline (epinephrine) or noradrenaline (norepinephrine) given with ● **VOLATILE LIQUID GENERAL ANAESTHETICS**; increased risk of hypertension when methylphenidate given with ● **VOLATILE LIQUID GENERAL ANAESTHETICS**
- Antacids: absorption of pseudoephedrine possibly increased by **ALUMINIUM HYDROXIDE**
- Anticoagulants: methylphenidate possibly enhances anticoagulant effect of ● **COUMARINS**
- Antidepressants: risk of hypertensive crisis when adrenaline (epinephrine), dobutamine, dopamine, noradrenaline (norepinephrine) or xylometazoline given with ● **MAOIS**; risk of hypertensive crisis when dexafetamine, ephedrine, isometheptene, lisdexafetamine, metaraminol,

## Sympathomimetics

- Antidepressants (continued)
    - methylphenidate, phenylephrine or pseudoephedrine given with • **MAOIS**, avoid dexamfetamine, ephedrine, isometheptene, lisdexametamine, metaraminol, methylphenidate, phenylephrine or pseudoephedrine for at least 2 weeks after stopping MAOIs; risk of hypertensive crisis when oxymetazoline given with • **MAOIS**, some manufacturers advise avoid oxymetazoline for at least 2 weeks after stopping MAOIs; risk of hypertensive crisis when sympathomimetics given with • **MOCLOBEMIDE**; methylphenidate possibly inhibits metabolism of **SSRIs** and **TRICYCLICS**; increased risk of hypertension and arrhythmias when adrenaline (epinephrine) given with • **TRICYCLICS** (but local anaesthetics with adrenaline appear to be safe); increased risk of hypertension and arrhythmias when noradrenaline (norepinephrine) or phenylephrine given with • **TRICYCLICS**
  - Antiepileptics: methylphenidate increases plasma concentration of **FOSPHENYTOIN** and **PHENYTOIN**; methylphenidate possibly increases plasma concentration of **PHENOBARBITAL** and **PRIMIDONE**
  - Antipsychotics: hypertensive effect of sympathomimetics antagonised by **ANTIPSYCHOTICS**; effects of lisdexametamine possibly reduced by **CHLORPROMAZINE**; dexamfetamine possibly antagonises antipsychotic effects of **CHLORPROMAZINE**; methylphenidate possibly increases side-effects of **RISPERIDONE**
  - Antivirals: plasma concentration of dexamfetamine possibly increased by **RITONAVIR**
  - Beta-blockers: increased risk of severe hypertension and bradycardia when adrenaline (epinephrine) given with non-cardioselective • **BETA-BLOCKERS**, also response to adrenaline (epinephrine) may be reduced; increased risk of severe hypertension and bradycardia when dobutamine given with non-cardioselective • **BETA-BLOCKERS**; possible increased risk of severe hypertension and bradycardia when noradrenaline (norepinephrine) given with non-cardioselective • **BETA-BLOCKERS**
  - Clonidine: possible risk of hypertension when adrenaline (epinephrine) or noradrenaline (norepinephrine) given with **CLONIDINE**; serious adverse events reported with concomitant use of methylphenidate and • **CLONIDINE** (causality not established)
  - Corticosteroids: ephedrine accelerates metabolism of **DEXAMETHASONE**
  - Dopaminergics: risk of toxicity when isometheptene given with • **BROMOCRIPTINE**; effects of adrenaline (epinephrine), dobutamine, dopamine and noradrenaline (norepinephrine) possibly enhanced by **ENTACAPONE**; avoid concomitant use of sympathomimetics with • **RASAGILINE**; avoidance of risk of hypertensive crisis when dopamine given with • **SELEGILINE**
  - Doxapram: increased risk of hypertension when sympathomimetics given with **DOXAPRAM**
  - Ergot Alkaloids: increased risk of ergotism when sympathomimetics given with **ERGOTAMINE**
  - Oxytocin: risk of hypertension when vasoconstrictor sympathomimetics given with **OXYTOCIN** (due to enhanced vasopressor effect)
  - Sympathomimetics: effects of adrenaline (epinephrine) possibly enhanced by • **DOPEXAMINE**; doxepamine possibly enhances effects of • **NORADRENALINE (NOREPINEPHRINE)**
  - Theophylline: avoidance of ephedrine in children advised by manufacturer of **THEOPHYLLINE**
  - Ulcer-healing Drugs: metabolism of dobutamine possibly inhibited by **CIMETIDINE**
- ## Sympathomimetics, Beta<sub>2</sub>
- Aminophylline: increased risk of hypokalaemia when high doses of beta<sub>2</sub> sympathomimetics given with **AMINOPHYLLINE**
  - Antifungals: plasma concentration of olodaterol increased by **KETOCONAZOLE**; metabolism of salmeterol inhibited by • **KETOCONAZOLE** (increased plasma concentration)
  - Antivirals: avoidance of salmeterol advised by manufacturer of **LOPINAVIR**, **RITONAVIR** and **TIPRANAVIR**; avoidance of

## Sympathomimetics, Beta<sub>2</sub>

- Antivirals (continued)
  - salmeterol advised by manufacturer of • **TELAPREVIR** (risk of ventricular arrhythmias)
- Atomoxetine: Increased risk of cardiovascular side-effects when *parenteral* salbutamol given with **ATOMOXETINE**
- Cardiac glycosides: salbutamol possibly reduces plasma concentration of **DIGOXIN**
- Cobicistat: avoidance of salmeterol advised by manufacturer of **COBICISTAT**
- Corticosteroids: increased risk of hypokalaemia when high doses of beta<sub>2</sub> sympathomimetics given with **CORTICOSTEROIDS**
- Cytotoxics: avoidance of salmeterol advised by manufacturer of **IDELALISIB**
- Diuretics: increased risk of hypokalaemia when high doses of beta<sub>2</sub> sympathomimetics given with **ACETAZOLAMIDE**, **LOOP DIURETICS** or **THIAZIDES AND RELATED DIURETICS**
- Methyl dopa: acute hypotension reported when *infusion* of salbutamol given with • **METHYLDOPA**
- Muscle Relaxants: bambuterol enhances effects of **SUXAMETHONIUM**
- Theophylline: increased risk of hypokalaemia when high doses of beta<sub>2</sub> sympathomimetics given with **THEOPHYLLINE**

## Tacrolimus

- NOTE** Interactions do not generally apply to tacrolimus used topically; risk of facial flushing and skin irritation with topical tacrolimus on consumption of alcohol
- Analgesics: possible increased risk of nephrotoxicity when tacrolimus given with **NSAIDs**; increased risk of nephrotoxicity when tacrolimus given with • **IBUPROFEN**
  - Angiotensin-II Receptor Antagonists: increased risk of hyperkalaemia when tacrolimus given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
  - Anti-arrhythmics: caution with tacrolimus advised by manufacturer of **DRONEDARONE**
  - Antibacterials: plasma concentration of tacrolimus increased by • **CLARITHROMYCIN** and • **ERYTHROMYCIN**; plasma concentration of tacrolimus possibly reduced by **RIFABUTIN**; plasma concentration of tacrolimus reduced by • **RIFAMPICIN**; increased risk of nephrotoxicity when tacrolimus given with • **AMINOGLYCOSIDES**; plasma concentration of tacrolimus possibly increased by • **CHLORAMPHENICOL** and • **TELITHROMYCIN**; possible increased risk of nephrotoxicity when tacrolimus given with **VANCOMYCIN**
  - Anticoagulants: tacrolimus possibly increases plasma concentration of • **DABIGATRAN**—manufacturer of dabigatran advises avoid concomitant use
  - Antidepressants: plasma concentration of tacrolimus reduced by • **ST JOHN'S WORT**—avoid concomitant use
  - Antiepileptics: plasma concentration of tacrolimus reduced by **FOSPHENYTOIN** and **PHENYTOIN**, also plasma concentration of fosphenytoin and phenytoin possibly increased; plasma concentration of tacrolimus reduced by • **PHENOBARBITAL** and • **PRIMIDONE**
  - Antifungals: plasma concentration of tacrolimus increased by • **FLUCONAZOLE**, • **ITRACONAZOLE**, • **KETOCONAZOLE**, • **POSACONAZOLE** and • **VORICONAZOLE** (consider reducing dose of tacrolimus); plasma concentration of tacrolimus possibly increased by • **MICONAZOLE oral gel**; increased risk of nephrotoxicity when tacrolimus given with • **AMPHOTERICIN**; plasma concentration of tacrolimus reduced by • **CASPOFUNGIN**
  - Antipsychotics: avoidance of tacrolimus advised by manufacturer of • **DROPERIDOL** (risk of ventricular arrhythmias)
  - Antivirals: possible increased risk of nephrotoxicity when tacrolimus given with **ACICLOVIR**, **GANCICLOVIR**, **VALACICLOVIR** or **VALGANCICLOVIR**; plasma concentration of tacrolimus possibly increased by • **ATAZANAVIR** and • **RITONAVIR**; plasma concentration of tacrolimus increased by • **BOCEPREVIR** (reduce dose of tacrolimus); plasma concentration of tacrolimus possibly affected by • **EFAVIRENZ**; plasma concentration of tacrolimus increased by • **FOSAMPRENAVIR**; plasma concentration of tacrolimus increased by • **SAQUINAVIR** (consider reducing dose of tacrolimus); plasma

**Tacrolimus**

- Antivirals (continued)
  - concentration of both drugs increased when tacrolimus given with ● **TELAPREVIR** (reduce dose of tacrolimus)
- Calcium-channel Blockers: plasma concentration of tacrolimus possibly increased by ● **FELODIPINE** and ● **VERAPAMIL**; plasma concentration of tacrolimus increased by ● **DILTIAZEM**, ● **NICARDIPINE** and ● **NIFEDIPINE**
- Ciclosporin: tacrolimus increases plasma concentration of ● **CYCLOSPORIN** (increased risk of nephrotoxicity)—avoid concomitant use
  - ▶ Colestilan: manufacturer of colestilan advises give tacrolimus at least 1 hour before or 3 hours after ● **COLESTILAN**
- Cytotoxics: tacrolimus possibly increases the plasma concentration of ● **AFATINIB**—manufacturer of afatinib advises separating administration of tacrolimus by 6 to 12 hours; caution with tacrolimus advised by manufacturer of ● **CRIZOTINIB**; plasma concentration of tacrolimus increased by ● **IMATINIB**
- ▶ Dexamethasone: increased risk of immunosuppression with tacrolimus advised by manufacturer of ● **DEXAMETHASONE**
- Diuretics: increased risk of hyperkalaemia when tacrolimus given with ● **POTASSIUM-SPARING DIURETICS** and ● **ALDOSTERONE ANTAGONISTS**
- Grapefruit Juice: plasma concentration of tacrolimus increased by ● **GRAPEFRUIT JUICE**
- ▶ Hormone Antagonists: plasma concentration of tacrolimus possibly increased by ● **DANAZOL**
- ▶ Lipid-regulating Drugs: separating administration from tacrolimus by 12 hours advised by manufacturer of ● **LOMITAPIDE**
- ▶ Mifamurtide: avoidance of tacrolimus advised by manufacturer of ● **MIFAMURTIDE**
- ▶ Oestrogens: plasma concentration of tacrolimus possibly increased by ● **ETHINYLESTRADIOL**
- Potassium Salts: increased risk of hyperkalaemia when tacrolimus given with ● **POTASSIUM SALTS**
- Ranolazine: plasma concentration of tacrolimus increased by ● **RANOLAZINE**
- ▶ Sevelamer: plasma concentration of tacrolimus possibly reduced by ● **SEVELAMER**
- ▶ Ulcer-healing Drugs: plasma concentration of tacrolimus possibly increased by ● **OMEPRAZOLE**

**Tadalafil**

- Alpha-blockers: enhanced hypotensive effect when tadalafil given with ● **DOXAZOSIN**—manufacturer of tadalafil advises avoid concomitant use; enhanced hypotensive effect when tadalafil given with ● **ALPHA-BLOCKERS**—when patient is stable on the alpha blocker initiate tadalafil at the lowest possible dose
  - ▶ Anti-arrhythmics: avoidance of tadalafil advised by manufacturer of ● **DISOPYRAMIDE** (risk of ventricular arrhythmias)
- Antibacterials: plasma concentration of tadalafil possibly increased by ● **CLARITHROMYCIN** and ● **ERYTHROMYCIN**; plasma concentration of tadalafil reduced by ● **RIFAMPICIN**—manufacturer of tadalafil advises avoid concomitant use
- Antifungals: tadalafil concentration is increased by ● **KETOCONAZOLE**—avoid concomitant use of tadalafil for pulmonary hypertension; plasma concentration of tadalafil possibly increased by ● **ITRACONAZOLE**
- Antivirals: plasma concentration of tadalafil possibly increased by ● **FOSAMPRENAVIR** and ● **INDINAVIR**; plasma concentration of tadalafil increased by ● **RITONAVIR**—manufacturer of tadalafil advises avoid concomitant use; increased risk of ventricular arrhythmias when tadalafil given with ● **SAQUINAVIR**—avoid concomitant use; avoidance of high doses of tadalafil advised by manufacturer of ● **TELAPREVIR**—consult product literature
  - ▶ Bosentan: plasma concentration of tadalafil reduced by ● **BOSENTAN**
- Cobistat: plasma concentration of tadalafil possibly increased by ● **COBICISTAT**—manufacturer of cobicistat advises reduce dose of tadalafil (consult cobicistat product literature)
- ▶ Dapoxetine: avoidance of tadalafil advised by manufacturer of ● **DAPOXETINE**

**Tadalafil (continued)**

- ▶ Grapefruit Juice: plasma concentration of tadalafil possibly increased by ● **GRAPEFRUIT JUICE**
- Nicorandil: tadalafil significantly enhances hypotensive effect of ● **NICORANDIL** (avoid concomitant use)
- Nitrates: tadalafil significantly enhances hypotensive effect of ● **NITRATES** (avoid concomitant use)
- Riociguat: possible enhanced hypotensive effect when tadalafil given with ● **RIOCIGUAT**—avoid concomitant use

**Tamoxifen**

- ▶ Antibacterials: metabolism of tamoxifen accelerated by ● **RIFAMPICIN** (reduced plasma concentration)
- Anticoagulants: tamoxifen enhances anticoagulant effect of ● **COUMARINS**
- Antidepressants: metabolism of tamoxifen to active metabolite possibly inhibited by ● **FLUOXETINE** and ● **PAROXETINE** (avoid concomitant use)
- Antipsychotics: avoidance of tamoxifen advised by manufacturer of ● **DROPERIDOL** (risk of ventricular arrhythmias)
- Bupropion: metabolism of tamoxifen to active metabolite possibly inhibited by ● **BUPROPION** (avoid concomitant use)
- Cinacalcet: metabolism of tamoxifen to active metabolite possibly inhibited by ● **CINACALCET** (avoid concomitant use)

**Tamsulosin** see Alpha-blockers

**Tapentadol** see Opioid Analgesics

**Taxanes** see Cabazitaxel, Docetaxel, and Paclitaxel

**Tegafur**

- ▶ Antibacterials: metabolism of tegafur inhibited by ● **METRONIDAZOLE** (increased toxicity)
- Anticoagulants: tegafur enhances anticoagulant effect of ● **COUMARINS**
- ▶ Antiepileptics: tegafur possibly inhibits metabolism of ● **FOSPHENYTOIN** and ● **PHENYTOIN** (increased risk of toxicity)
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- ▶ Filgrastim: neutropenia possibly exacerbated when tegafur given with ● **FILGRASTIM**
- Folate: toxicity of tegafur increased by ● **FOLIC ACID**—avoid concomitant use
  - ▶ Lipefilgrastim: neutropenia possibly exacerbated when tegafur given with ● **LIPEFILGRASTIM**
  - ▶ Pegfilgrastim: neutropenia possibly exacerbated when tegafur given with ● **PEGFILGRASTIM**
- ▶ Ulcer-healing Drugs: metabolism of tegafur inhibited by ● **CIMETIDINE** (increased plasma concentration)

**Teicoplanin**

- ▶ Vaccines: antibacterials inactivate ● **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Telaprevir**

- Alpha-blockers: manufacturer of telaprevir advises avoid concomitant use with ● **ALFUZOSIN**
- Analgesics: manufacturer of telaprevir advises caution with ● **METHADONE** (risk of ventricular arrhythmias)
- Anti-arrhythmics: manufacturer of telaprevir advises avoid concomitant use with ● **AMIODARONE** and ● **DISOPYRAMIDE** (risk of ventricular arrhythmias); manufacturer of telaprevir advises caution with ● **FLECAINIDE** and ● **PROPAFENONE** (risk of ventricular arrhythmias); manufacturer of telaprevir advises caution with ● **INTRAVENOUS LIDOCAINE**
- Antibacterials: plasma concentration of both drugs possibly increased when telaprevir given with ● **CLARITHROMYCIN**, ● **ERYTHROMYCIN** and ● **TELITHROMYCIN** (increased risk of ventricular arrhythmias); manufacturer of telaprevir advises avoid concomitant use with ● **RIFABUTIN**; plasma concentration of telaprevir significantly reduced by ● **RIFAMPICIN**—avoid concomitant use
- Anticoagulants: telaprevir possibly affects plasma concentration of ● **WARFARIN**; avoidance of telaprevir advised by manufacturer of ● **APIXABAN**; telaprevir possibly increases plasma concentration of ● **DABIGATRAN**
- Antidepressants: telaprevir possibly increases plasma concentration of ● **TRAZODONE**; manufacturer of telaprevir advises avoid concomitant use with ● **ST JOHN'S WORT**



**Telaprevir** (continued)

- Antidiabetics: telaprevir increases plasma concentration of **METFORMIN** (consider reducing dose of metformin)
- Antiepileptics: manufacturer of telaprevir advises avoid concomitant use with **CARBAMAZEPINE**, **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**
- Antifungals: plasma concentration of both drugs possibly increased when telaprevir given with **KETOCONAZOLE** (increased risk of ventricular arrhythmias)—reduce dose of ketoconazole; telaprevir possibly increases plasma concentration of **ITRACONAZOLE**; telaprevir possibly increases plasma concentration of **POSACONAZOLE** (increased risk of ventricular arrhythmias); telaprevir possibly affects plasma concentration of **VORICONAZOLE** (possible increased risk of ventricular arrhythmias)
- Antipsychotics: telaprevir possibly increases plasma concentration of **LURASIDONE**—avoid concomitant use; manufacturer of telaprevir advises avoid concomitant use with **PIMOZIDE**; telaprevir possibly increases plasma concentration of **QUETIAPINE**—manufacturer of quetiapine advises avoid concomitant use
- Antivirals: plasma concentration of telaprevir possibly reduced by **ATAZANAVIR**, also plasma concentration of atazanavir possibly increased; telaprevir increases the plasma concentration of **DACLATASVIR**—reduce dose of daclatasvir (see under Daclatasvir, p. 544); avoid concomitant use of telaprevir with **DARUNAVIR**; plasma concentration of telaprevir reduced by **EFAVIRENZ**—increase dose of telaprevir; manufacturers advise avoid concomitant use of telaprevir with **FOSAMPRENAVIR** and **LOPINAVIR**; telaprevir increases plasma concentration of **MARAVIROC** (consider reducing dose of maraviroc); plasma concentration of telaprevir possibly reduced by **NEVIRAPINE**—consider increasing dose of telaprevir; plasma concentration of telaprevir possibly reduced by **RITONAVIR**; telaprevir increases plasma concentration of **TENOFOVIR**; avoidance of telaprevir advised by manufacturer of **TIPRANAVIR**
- Anxiolytics and Hypnotics: telaprevir possibly increases plasma concentration of **MIDAZOLAM** (risk of prolonged sedation)—avoid concomitant use of oral midazolam)
- Beta-blockers: manufacturer of telaprevir advises avoid concomitant use with **SOTALOL** (risk of ventricular arrhythmias)
- Bosentan: plasma concentration of telaprevir possibly reduced by **BOSENTAN**, also plasma concentration of bosentan possibly increased
- Calcium-channel Blockers: telaprevir increases plasma concentration of **AMLODIPINE** (consider reducing dose of amlodipine); manufacturer of telaprevir advises caution with **DILTIAZEM**, **FELODIPINE**, **NICARDIPINE**, **NIFEDIPINE** and **VERAPAMIL**
- Cardiac Glycosides: telaprevir increases plasma concentration of **DIGOXIN**
- Ciclosporin: plasma concentration of both drugs increased when telaprevir given with **CICLOSPORIN** (reduce dose of ciclosporin)
- Cilostazol: telaprevir possibly increases plasma concentration of **CILOSTAZOL** (see under Cilostazol, p. 206)
- Colchicine: telaprevir possibly increases risk of **COLCHICINE** toxicity—suspend or reduce dose of colchicine (avoid concomitant use in hepatic or renal impairment)
- Corticosteroids: telaprevir possibly increases plasma concentration of *inhaled* and *intranasal* **BUDESONIDE** and **FLUTICASON**; plasma concentration of telaprevir possibly reduced by **DEXAMETHASONE**
- Cytotoxics: telaprevir possibly increases the plasma concentration of **BOSUTINIB**—manufacturer of bosutinib advises avoid or consider reducing dose of bosutinib; manufacturer of ruxolitinib advises dose reduction when telaprevir given with **RUXOLITINIB**—consult ruxolitinib product literature
- Domperidone: possible increased risk of ventricular arrhythmias when telaprevir given with **DOMPERIDONE**—avoid concomitant use
- Ergot Alkaloids: manufacturer of telaprevir advises avoid concomitant use with **ERGOT ALKALOIDS**

**Telaprevir** (continued)

- Lipid-regulating Drugs: manufacturer of telaprevir advises avoid concomitant use with **ATORVASTATIN**; manufacturers advise avoid concomitant use of telaprevir with **SIMVASTATIN**; avoidance of telaprevir advised by manufacturer of **LOMITAPIDE** (plasma concentration of lomitapide possibly increased)
- Oestrogens: telaprevir possibly reduces plasma concentration of **ETHINYLESTRADIOL**—manufacturer of telaprevir advises additional contraceptive precautions
- Sildenafil: manufacturer of telaprevir advises avoid concomitant use with **SILDENAFIL**
- Sirolimus: plasma concentration of both drugs increased when telaprevir given with **SIROLIMUS** (reduce dose of sirolimus)
- Sympathomimetics, Beta<sub>2</sub>: manufacturer of telaprevir advises avoid concomitant use with **SALMETEROL** (risk of ventricular arrhythmias)
- Tacrolimus: plasma concentration of both drugs increased when telaprevir given with **TACROLIMUS** (reduce dose of tacrolimus)
- Tadalafil: manufacturer of telaprevir advises avoid concomitant use with high doses of **TADALAFIL**—consult product literature
- Vardenafil: manufacturer of telaprevir advises avoid concomitant use with **VARDENAFIL**

**Telavancin**

- Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Telbivudine**

- Interferons: increased risk of peripheral neuropathy when telbivudine given with **INTERFERON ALFA** and **PEGINTERFERON ALFA**

**Telithromycin**

- Anaesthetics: possible increased risk of ventricular arrhythmias when telithromycin given with **METHADONE**; telithromycin inhibits the metabolism of **OXYCODONE**
- Anti-arrhythmics: possible increased risk of ventricular arrhythmias when telithromycin given with **AMIODARONE** and **DISOPYRAMIDE**; increased risk of ventricular arrhythmias when telithromycin given with **DRONEDARONE**—avoid concomitant use
- Antibacterials: possible increased risk of ventricular arrhythmias when telithromycin given with **MOXIFLOXACIN**; plasma concentration of telithromycin reduced by **RIFAMPICIN** (avoid during and for 2 weeks after rifampicin)
- Anticoagulants: avoidance of telithromycin advised by manufacturer of **APIXABAN**
- Antidepressants: possible increased risk of ventricular arrhythmias when telithromycin given with **CITALOPRAM** and **TRICYCLICS**; plasma concentration of telithromycin reduced by **ST JOHN'S WORT** (avoid during and for 2 weeks after St John's wort)
- Antiepileptics: plasma concentration of telithromycin reduced by **CARBAMAZEPINE**, **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE** (avoid during and for 2 weeks after carbamazepine, fosphenytoin, phenobarbital, phenytoin and primidone)
- Antifungals: plasma concentration of telithromycin increased by **KETOCONAZOLE**—avoid in severe renal and hepatic impairment
- Antimuscarinics: manufacturer of fesoterodine advises dose reduction when telithromycin given with **FESOTERODINE**—consult fesoterodine product literature
- Antipsychotics: possible increased risk of ventricular arrhythmias when telithromycin given with **CHLORPROMAZINE**; telithromycin possibly increases plasma concentration of **LURASIDONE**—avoid concomitant use; increased risk of ventricular arrhythmias when telithromycin given with **PIMOZIDE**—avoid concomitant use; telithromycin possibly increases plasma concentration of **QUETIAPINE**
- Antivirals: manufacturer of telithromycin advises avoid concomitant use with **ATAZANAVIR**, **FOSAMPRENAVIR**, **INDINAVIR**, **LOPINAVIR**, **RITONAVIR** and **TIPRANAVIR** in severe renal and hepatic impairment; telithromycin possibly increases the plasma concentration of **DACLATASVIR**—reduce

**Telithromycin**

- Antivirals (continued)
  - dose of daclatasvir (see under Daclatasvir, p. 544); telithromycin possibly increases plasma concentration of
  - **MARAVIROC** (consider reducing dose of maraviroc); manufacturer of telithromycin advises avoid concomitant use with
  - **SAQUINAVIR** (risk of ventricular arrhythmias); telithromycin possibly increases plasma concentration of
  - **SIMEPREVIR**—manufacturer of simeprevir advises avoid concomitant use; plasma concentration of both drugs possibly increased when telithromycin given with
  - **TELAPREVIR** (increased risk of ventricular arrhythmias)
- Anxiolytics and Hypnotics: telithromycin inhibits metabolism of
  - **MIDAZOLAM** (increased plasma concentration with increased sedation)
- ▶ Aprepitant: telithromycin possibly increases plasma concentration of **APREPITANT**
- Avanafile: telithromycin possibly increases plasma concentration of • **AVANAFIL**—manufacturer of avanafil advises avoid concomitant use
- Calcium-channel Blockers: telithromycin possibly inhibits metabolism of • **CALCIUM-CHANNEL BLOCKERS** (increased risk of side-effects)
- ▶ Cardiac Glycosides: telithromycin possibly increases plasma concentration of **DIGOXIN**
- Ciclosporin: telithromycin possibly increases plasma concentration of • **CICLOSPORIN**
- Colchicine: telithromycin possibly increases risk of
  - **COLCHICINE** toxicity—suspend or reduce dose of colchicine (avoid concomitant use in hepatic or renal impairment)
- Cytotoxics: telithromycin possibly increases plasma concentration of **AXITINIB** (reduce dose of axitinib—consult axitinib product literature); telithromycin possibly increases the plasma concentration of • **BOSUTINIB** and • **CABAZITAXEL**—manufacturer of bosutinib and cabazitaxel advises avoid or consider reducing dose of bosutinib and cabazitaxel; telithromycin possibly increases plasma concentration of
  - **CRIZOTINIB** and • **EVEROLIMUS**—manufacturer of crizotinib and everolimus advises avoid concomitant use; avoidance of telithromycin advised by manufacturer of **DASATINIB** (plasma concentration of dasatinib possibly increased); telithromycin possibly increases the plasma concentration of • **IBRUTINIB**—reduce dose of ibrutinib (see under Ibrutinib, p. 809); avoidance of telithromycin advised by manufacturer of
  - **LAPATINIB** and • **NILOTINIB**; telithromycin possibly increases plasma concentration of • **PAZOPANIB** (reduce dose of pazopanib); telithromycin possibly increases plasma concentration of **PONATINIB**—consider reducing initial dose of ponatinib (see under Ponatinib, p. 814); manufacturer of ruxolitinib advises dose reduction when telithromycin given with
  - **RUXOLITINIB**—consult ruxolitinib product literature; telithromycin possibly increases plasma concentration of
  - **DOCETAXEL**—manufacturer of docetaxel advises avoid concomitant use or consider reducing docetaxel dose
- Dapoxetine: avoidance of telithromycin advised by manufacturer of • **DAPOXETINE** (increased risk of toxicity)
- Diuretics: telithromycin increases plasma concentration of
  - **EPLERENONE**—avoid concomitant use
- Domperidone: possible increased risk of ventricular arrhythmias when telithromycin given with • **DOMPERIDONE**—avoid concomitant use
- Ergot Alkaloids: increased risk of ergotism when telithromycin given with • **ERGOTAMINE**—avoid concomitant use
- ▶ Fosaprepitant: telithromycin possibly increases plasma concentration of **FOSAPREPITANT**
- Ivabradine: telithromycin possibly increases plasma concentration of • **IVABRADINE**—avoid concomitant use
- Ivacaftor: telithromycin possibly increases plasma concentration of • **IVACAFTOR** (see under Ivacaftor, p. 257)
- Lipid-regulating Drugs: increased risk of myopathy when telithromycin given with • **ATORVASTATIN** or • **SIMVASTATIN** (avoid concomitant use); possible increased risk of myopathy when telithromycin given with **PRAVASTATIN**; avoidance of telithromycin advised by manufacturer of • **LOMITAPIDE** (plasma concentration of lomitapide possibly increased)

**Telithromycin** (continued)

- Pentamidine Isetionate: possible increased risk of ventricular arrhythmias when telithromycin given with *parenteral*
  - **PENTAMIDINE ISETIONATE**
- Ranolazine: telithromycin possibly increases plasma concentration of • **RANOLAZINE**—manufacturer of ranolazine advises avoid concomitant use
- Sildenafil: telithromycin possibly increases plasma concentration of • **SILDENAFIL**—consider reducing initial dose of sildenafil for erectile dysfunction or reduce sildenafil dose frequency to once daily for pulmonary hypertension
- Sirolimus: telithromycin increases plasma concentration of
  - **SIROLIMUS**—avoid concomitant use
- Tacrolimus: telithromycin possibly increases plasma concentration of • **TACROLIMUS**
- ▶ Ulipristal: avoidance of telithromycin advised by manufacturer of *low-dose* **ULIPRISTAL**
- ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Telmisartan** see Angiotensin-II Receptor Antagonists

**Temazepam** see Anxiolytics and Hypnotics

**Temocillin** see Penicillins

**Temoporfin**

- Cytotoxics: increased skin photosensitivity when temoporfin given with *topical* • **FLUOROURACIL**

**Temozolomide**

- ▶ Antiepileptics: plasma concentration of temozolomide increased by **SODIUM VALPROATE** and **VALPROIC ACID**
- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)

**Temsirolimus**

**NOTE** The main active metabolite of temsirolimus is sirolimus—see also interactions of sirolimus and consult product literature

- Antibacterials: plasma concentration of active metabolite of temsirolimus reduced by • **RIFAMPICIN**—avoid concomitant use
- Antifungals: plasma concentration of active metabolite of temsirolimus increased by • **KETOCONAZOLE**—avoid concomitant use; manufacturer of temsirolimus advises avoid concomitant use with • **ITRACONAZOLE** (plasma concentration of temsirolimus possibly increased)
- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)

**Tenofovir**

- Antivirals: manufacturer of tenofovir advises avoid concomitant use with **ADEFOVIR**; tenofovir reduces plasma concentration of **ATAZANAVIR**, also plasma concentration of tenofovir possibly increased; tenofovir increases plasma concentration of • **DIDANOSINE** (increased risk of toxicity)—avoid concomitant use; plasma concentration of tenofovir increased by **LOPINAVIR** and **TELAPREVIR**
- Orlistat: absorption of tenofovir possibly reduced by
  - **ORLISTAT**

**Tenoxicam** see NSAIDs

**Terazosin** see Alpha-blockers

**Terbinafine**

- Antibacterials: plasma concentration of terbinafine reduced by
  - **RIFAMPICIN**
- Antidepressants: terbinafine possibly increases plasma concentration of **PAROXETINE** and **TRICYCLICS**
- ▶ Antifungals: terbinafine increases plasma concentration of **FLUCONAZOLE**
- ▶ Ciclosporin: terbinafine possibly reduces plasma concentration of **CICLOSPORIN**
- Oestrogens: occasional reports of breakthrough bleeding when terbinafine given with **OESTROGENS** (when used for contraception)
- ▶ Progestogens: occasional reports of breakthrough bleeding when terbinafine given with **PROGESTOGENS** (when used for contraception)
- ▶ Ulcer-healing Drugs: plasma concentration of terbinafine increased by **CIMETIDINE**

**Terbutaline** see Sympathomimetics, Beta<sub>2</sub>

**Teriflunomide**

- Antibacterials: teriflunomide increases plasma concentration of **CEFAZOLIN**; plasma concentration of teriflunomide reduced by **RIFAMPICIN**
- Antidiabetics: teriflunomide increases plasma concentration of **REPAGLINIDE**
- Lipid-regulating Drugs: the effect of teriflunomide is significantly decreased by **COLESTYRAMINE** (enhanced elimination)—avoid unless drug elimination desired; teriflunomide increases plasma concentration of
  - **ROSUVASTATIN** (consider reducing dose of rosuvastatin)
- Oestrogens: teriflunomide increases plasma concentration of **ETHINYLESTRADIOL**
- Progestogens: teriflunomide increases plasma concentration of **LEVONORGESTREL**
- Vaccines: risk of generalised infections when teriflunomide given with live ● **VACCINES**—avoid concomitant use

**Testolactone**

- Anticoagulants: testolactone enhances anticoagulant effect of
  - **COUMARINS** and ● **PHENINDIONE**

**Testosterone**

- Anticoagulants: testosterone enhances anticoagulant effect of
  - **COUMARINS** and ● **PHENINDIONE**
- Antidiabetics: testosterone possibly enhances hypoglycaemic effect of **ANTIDIABETICS**

**Tetrabenazine**

- Antidepressants: risk of CNS toxicity when tetrabenazine given with ● **MAOIS** (avoid tetrabenazine for 2 weeks after MAOIs)
- Antipsychotics: increased risk of extrapyramidal side-effects when tetrabenazine given with **ANTIPSYCHOTICS**
- Dopaminergics: increased risk of extrapyramidal side-effects when tetrabenazine given with **AMANTADINE**
- Metoclopramide: increased risk of extrapyramidal side-effects when tetrabenazine given with **METOCLOPRAMIDE**

**Tetracosactide** see Corticosteroids**Tetracycline** see Tetracyclines**Tetracyclines**

- ACE Inhibitors: absorption of tetracyclines reduced by **QUINAPRIL** tablets (quinapril tablets contain magnesium carbonate)
- Adsorbents: absorption of tetracyclines possibly reduced by **KAOLIN**
- Antacids: absorption of tetracyclines reduced by **ANTACIDS**
- Antibacterials: plasma concentration of doxycycline reduced by **RIFAMPICIN**—consider increasing dose of doxycycline; tetracyclines possibly antagonise effects of **PENICILLINS**
- Anticoagulants: tetracyclines possibly enhance anticoagulant effect of ● **COUMARINS** and ● **PHENINDIONE**
- Antidiabetics: tetracyclines possibly enhance hypoglycaemic effect of **SULFONYLUREAS**
- Antiepileptics: metabolism of doxycycline accelerated by **CARBAMAZEPINE** (reduced effect); metabolism of doxycycline accelerated by **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE** (reduced plasma concentration)
- Atovaquone: tetracycline reduces plasma concentration of **ATOVAQUONE**
- Calcium Salts: absorption of tetracycline reduced by **CALCIUM SALTS**
- Cytotoxics: doxycycline or tetracycline increase risk of **METHOTREXATE** toxicity
- Dairy Products: absorption of tetracyclines (except doxycycline and minocycline) reduced by **DAIRY PRODUCTS**
- Diuretics: manufacturer of lymecycline advises avoid concomitant use with **DIURETICS**
- Ergot Alkaloids: increased risk of ergotism when tetracyclines given with **ERGOTAMINE**
- Iron Salts: absorption of tetracyclines reduced by oral **IRON SALTS**, also absorption of oral iron salts reduced by tetracyclines
- Lipid-regulating Drugs: absorption of tetracycline possibly reduced by **COLESTIPOL** and **COLESTYRAMINE**
- Retinoids: possible increased risk of benign intracranial hypertension when tetracyclines given with ● **RETINOIDS** (avoid concomitant use)

**Tetracyclines** (continued)

- Strontium Ranelate: absorption of tetracyclines reduced by **STRONTIUM RANELATE** (manufacturer of strontium ranelate advises avoid concomitant use)
- Ulcer-healing Drugs: absorption of tetracyclines reduced by **SUCRALFATE** and **TRIPOTASSIUM DICITRATOBISMUTHATE**
- Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF
- Zinc: absorption of tetracyclines reduced by **ZINC**, also absorption of zinc reduced by tetracyclines

**Theophylline**

- Allopurinol: plasma concentration of theophylline possibly increased by **ALLOPURINOL**
- Anaesthetics, General: increased risk of convulsions when theophylline given with **KETAMINE**
- Anti-arrhythmics: theophylline antagonises anti-arrhythmic effect of **ADENOSINE**—manufacturer of adenosine advises avoid theophylline for 24 hours before adenosine; plasma concentration of theophylline increased by **PROPAFENONE**
- Antibacterials: plasma concentration of theophylline possibly increased by **CLARITHROMYCIN** and **ISONIAZID**; plasma concentration of theophylline increased by ● **ERYTHROMYCIN** (also theophylline may reduce absorption of oral erythromycin); plasma concentration of theophylline increased by ● **CIPROFLOXACIN** and ● **NORFLOXACIN**; metabolism of theophylline accelerated by **RIFAMPICIN** (reduced plasma concentration); possible increased risk of convulsions when theophylline given with ● **QUINOLONES**
- Antidepressants: plasma concentration of theophylline increased by ● **FLUVOXAMINE** (concomitant use should usually be avoided, but where not possible halve theophylline dose and monitor plasma-theophylline concentration); plasma concentration of theophylline possibly reduced by **ST JOHN'S WORT**
- Antiepileptics: metabolism of theophylline accelerated by **CARBAMAZEPINE**, ● **PHENOBARBITAL** and ● **PRIMIDONE** (reduced effect); plasma concentration of both drugs reduced when theophylline given with ● **FOSPHENYTOIN** and ● **PHENYTOIN**
- Antifungals: plasma concentration of theophylline possibly increased by ● **FLUCONAZOLE** and ● **KETOCONAZOLE**
- Antivirals: plasma concentration of theophylline possibly increased by **ACICLOVIR** and **VALACICLOVIR**; metabolism of theophylline accelerated by ● **RITONAVIR** (reduced plasma concentration)
- Anxiolytics and Hypnotics: theophylline possibly reduces effects of **BENZODIAZEPINES**
- Caffeine citrate: avoidance of theophylline advised by manufacturer of **CAFFEINE CITRATE**
- Calcium-channel Blockers: plasma concentration of theophylline possibly increased by ● **CALCIUM-CHANNEL BLOCKERS** (enhanced effect); plasma concentration of theophylline increased by **DILTIAZEM**; plasma concentration of theophylline increased by ● **VERAPAMIL** (enhanced effect)
- Corticosteroids: increased risk of hypokalaemia when theophylline given with **CORTICOSTEROIDS**
- Cytotoxics: plasma concentration of theophylline possibly increased by **METHOTREXATE**
- Deferasirox: plasma concentration of theophylline increased by ● **DEFERASIROX** (consider reducing dose of theophylline)
- Disulfiram: metabolism of theophylline inhibited by **DISULFIRAM** (increased risk of toxicity)
- Diuretics: increased risk of hypokalaemia when theophylline given with **ACETAZOLAMIDE**, **LOOP DIURETICS** or **THIAZIDES AND RELATED DIURETICS**
- Doxapram: increased CNS stimulation when theophylline given with **DOXAPRAM**
- Interferons: metabolism of theophylline inhibited by ● **INTERFERON ALFA** and ● **PEGINTERFERON ALFA** (consider reducing dose of theophylline)
- Leukotriene Receptor Antagonists: plasma concentration of theophylline possibly increased by **ZAFIRLUKAST**, also plasma concentration of zafirlukast reduced
- Lithium: theophylline increases excretion of **LITHIUM** (reduced plasma concentration)
- Oestrogens: plasma concentration of theophylline increased by **OESTROGENS** (consider reducing dose of theophylline)

**Theophylline** (continued)

- ▶ Pentoxifylline: plasma concentration of theophylline increased by **PENTOXIFYLLINE**
- ▶ Roflumilast: avoidance of theophylline advised by manufacturer of **ROFLUMILAST**
- ▶ Sulfipyrazone: plasma concentration of theophylline reduced by **SULFINPYRAZONE**
- ▶ Sympathomimetics: manufacturer of theophylline advises avoid concomitant use with **EPHEDRINE** in children
- ▶ Sympathomimetics, Beta<sub>2</sub>: increased risk of hypokalaemia when theophylline given with high doses of **BETA<sub>2</sub>**
- ▶ **SYMPATHOMIMETICS**
- Ulcer-healing Drugs: metabolism of theophylline inhibited by
  - **CIMETIDINE** (increased plasma concentration); absorption of theophylline possibly reduced by **SUCRALFATE** (give at least 2 hours apart)
- ▶ Vaccines: plasma concentration of theophylline possibly increased by **INFLUENZA VACCINE**

**Thiazolidinediones** see Antidiabetics**Thiopental** see Anaesthetics, General**Thiotepa**

- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)
- ▶ Muscle Relaxants: thiotepa enhances effects of **SUXAMETHONIUM**

**Thioxanthenes** see Antipsychotics**Thyroid Hormones**

- ▶ Antacids: absorption of levothyroxine possibly reduced by **ANTACIDS**
- ▶ Anti-arrhythmics: serum concentrations of thyroid hormones can be affected by **AMIODARONE**—monitor thyroid function closely
- ▶ Antibacterials: metabolism of levothyroxine accelerated by **RIFAMPICIN** may increase requirements for levothyroxine in hypothyroidism
- Anticoagulants: thyroid hormones enhance anticoagulant effect of
  - **COUMARINS** and **PHENINDIONE**
- ▶ Antidepressants: thyroid hormones enhance effects of **AMITRIPTYLINE** and **IMIPRAMINE**; thyroid hormones possibly enhance effects of **TRICYCLICS**
- ▶ Antiepileptics: metabolism of thyroid hormones accelerated by **CARBAMAZEPINE**, **PHENOBARBITAL** and **PRIMIDONE** (may increase requirements for thyroid hormones in hypothyroidism); metabolism of thyroid hormones accelerated by **FOSPHENYTOIN** and **PHENYTOIN** (may increase requirements in hypothyroidism), also plasma concentration of fosphenytoin and phenytoin possibly increased
- ▶ Beta-blockers: levothyroxine accelerates metabolism of **PROPRANOLOL**
- ▶ Calcium Salts: absorption of levothyroxine reduced by **CALCIUM SALTS**
- ▶ Colestilan: manufacturer of colestilan advises give levothyroxine at least 1 hour before or 3 hours after **COLESTILAN**
- ▶ Cytotoxics: plasma concentration of levothyroxine possibly reduced by **IMATINIB**
- ▶ Iron Salts: absorption of levothyroxine reduced by *oral* **IRON SALTS** (give at least 2 hours apart)
- ▶ Lanthanum: absorption of levothyroxine reduced by **LANTHANUM** (give at least 2 hours apart)
- ▶ Lipid-regulating Drugs: absorption of levothyroxine reduced by **COLESEVELAM**; absorption of thyroid hormones reduced by **COLESTIPOL** and **COLESTYRAMINE**
- ▶ Oestrogens: requirements for thyroid hormones in hypothyroidism may be increased by **OESTROGENS**
- ▶ Orlistat: possible increased risk of hypothyroidism when levothyroxine given with **ORLISTAT**
- ▶ Polystyrene Sulfonate Resins: absorption of levothyroxine reduced by **POLYSTYRENE SULFONATE RESINS**
- ▶ Sevelamer: absorption of levothyroxine possibly reduced by **SEVELAMER**
- ▶ Ulcer-healing Drugs: absorption of levothyroxine reduced by **CIMETIDINE** and **SUCRALFATE**

**Tiagabine**

- Antidepressants: anticonvulsant effect of antiepileptics possibly antagonised by **MAOIS** and **TRICYCLIC-RELATED**

**Tiagabine**

- Antidepressants (continued)
  - **ANTI-DEPRESSANTS** (convulsive threshold lowered); anticonvulsant effect of antiepileptics antagonised by **SSRIS** and **TRICYCLICS** (convulsive threshold lowered)
- ▶ Antiepileptics: plasma concentration of tiagabine reduced by **CARBAMAZEPINE**, **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**
- Antimalarials: anticonvulsant effect of antiepileptics antagonised by **MEFLOQUINE**
- Antipsychotics: anticonvulsant effect of antiepileptics antagonised by **ANTI-PSYCHOTICS** (convulsive threshold lowered)
- Orlistat: possible increased risk of convulsions when antiepileptics given with **ORLISTAT**

**Tiaprofenic Acid** see NSAIDs**Tibolone**

- ▶ Antibacterials: metabolism of tibolone accelerated by **RIFAMPICIN** (reduced plasma concentration)
- ▶ Antiepileptics: metabolism of tibolone accelerated by **CARBAMAZEPINE** (reduced plasma concentration); metabolism of tibolone accelerated by **FOSPHENYTOIN** and **PHENYTOIN**

**Ticagrelor**

- Antibacterials: plasma concentration of ticagrelor possibly increased by **CLARITHROMYCIN**—manufacturer of ticagrelor advises avoid concomitant use; plasma concentration of ticagrelor possibly increased by **ERYTHROMYCIN**; plasma concentration of ticagrelor reduced by **RIFAMPICIN**
- Anticoagulants: ticagrelor increases plasma concentration of
  - **DABIGATRAN**
- ▶ Antidepressants: possible increased risk of bleeding when ticagrelor given with **CITALOPRAM**, **PAROXETINE** or **SERTRALINE**
- ▶ Antiepileptics: plasma concentration of ticagrelor possibly reduced by **CARBAMAZEPINE**, **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**
- Antifungals: plasma concentration of ticagrelor increased by **KETOCONAZOLE**—manufacturer of ticagrelor advises avoid concomitant use
- Antivirals: plasma concentration of ticagrelor possibly increased by **ATAZANAVIR** and **RITONAVIR**—manufacturer of ticagrelor advises avoid concomitant use
- ▶ Calcium-channel Blockers: plasma concentration of ticagrelor increased by **DILTIAZEM**
- Cardiac Glycosides: ticagrelor increases plasma concentration of **DIGOXIN**
- ▶ Ciclosporin: plasma concentration of ticagrelor increased by **CICLOSPORIN**
- Ergot Alkaloids: ticagrelor possibly increases plasma concentration of **ERGOT ALKALOIDS**
- Lipid-regulating Drugs: ticagrelor increases plasma concentration of **SIMVASTATIN** (increased risk of toxicity); separating administration from ticagrelor by 12 hours advised by manufacturer of **LOMITAPIDE**

**Ticarcillin** see Penicillins**Tick-borne Encephalitis Vaccine** see Vaccines**Tigecycline**

- ▶ Anticoagulants: tigecycline possibly enhances anticoagulant effect of **COUMARINS**
- ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Timolol** see Beta-blockers**Tinidazole**

- ▶ Alcohol: possibility of disulfiram-like reaction when tinidazole given with **ALCOHOL**
- ▶ Antibacterials: plasma concentration of tinidazole possibly reduced by **RIFAMPICIN**
- ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Tinzaparin** see Heparins**Tioguanine**

- Antipsychotics: avoid concomitant use of cytotoxics with
  - **CLOZAPINE** (increased risk of agranulocytosis)
- ▶ Cytotoxics: increased risk of hepatotoxicity when tioguanine given with **BUSULFAN**

**Tiotropium** see Antimuscarinics



**Tipranavir**

- ▶ Analgesics: plasma concentration of tipranavir possibly reduced by **BUPRENORPHINE**
- ▶ Antacids: absorption of tipranavir reduced by **ANTACIDS** (give at least 2 hours apart)
- Antibacterials: tipranavir increases plasma concentration of
  - **CLARITHROMYCIN** (reduce dose of clarithromycin in renal impairment), also plasma concentration of tipranavir increased by clarithromycin; tipranavir increases plasma concentration of
    - **RIFABUTIN** (reduce dose of rifabutin); plasma concentration of tipranavir possibly reduced by
    - **RIFAMPICIN**—avoid concomitant use; avoidance of concomitant tipranavir in severe renal and hepatic impairment advised by manufacturer of
    - **TELITHROMYCIN**
- ▶ Anticoagulants: avoidance of tipranavir advised by manufacturer of **APIXABAN** and **RIVAROXABAN**
- Antidepressants: plasma concentration of tipranavir possibly reduced by
  - **ST JOHN'S WORT**—avoid concomitant use
- ▶ Antiepileptics: plasma concentration of tipranavir possibly reduced by **CARBAMAZEPINE**
- ▶ Antifungals: plasma concentration of tipranavir increased by **FLUCONAZOLE**
- Antimalarials: caution with tipranavir advised by manufacturer of **ARTEMETHER WITH LUMEFANTRINE**; tipranavir possibly increases plasma concentration of
  - **QUININE** (increased risk of toxicity)
- ▶ Antimuscarinics: avoidance of tipranavir advised by manufacturer of **DARIFENACIN**
- Antipsychotics: tipranavir possibly increases plasma concentration of
  - **ARIPRAZOLE** (reduce dose of aripiprazole—consult aripiprazole product literature); tipranavir possibly increases plasma concentration of
  - **QUETIAPINE**—manufacturer of quetiapine advises avoid concomitant use
- Antivirals: tipranavir reduces plasma concentration of
  - **ABACAVIR**, ● **FOSAMPRENAVIR**, ● **LOPINAVIR**, ● **SAQUINAVIR** and ● **ZIDOVUDINE**; plasma concentration of tipranavir increased by **ATAZANAVIR** (also plasma concentration of atazanavir reduced); manufacturer of tipranavir advises avoid concomitant use with **BOCEPREVIR** and **TELAPREVIR**; tipranavir reduces plasma concentration of **DIDANOSINE**—manufacturer of tipranavir advises tipranavir and didanosine *capsules* should be taken at least 2 hours apart; tipranavir reduces the plasma concentration of ● **DOLUTEGRAVIR** (see under Dolutegravir, p. 557); tipranavir reduces plasma concentration of ● **ETRAVIRINE**, also plasma concentration of tipranavir increased (avoid concomitant use)
- Beta-blockers: manufacturer of tipranavir advises avoid concomitant use with ● **METOPROLOL** for heart failure
- ▶ Bosentan: manufacturer of tipranavir advises avoid concomitant use with **BOSENTAN**
- Cobicistat: plasma concentration of both drugs reduced when tipranavir given with ● **COBICISTAT** (avoid concomitant use)
- Lipid-regulating Drugs: increased risk of myopathy when tipranavir given with ● **ATORVASTATIN** (see under Atorvastatin, p. 179); tipranavir increases plasma concentration of ● **ROSUVASTATIN**—adjust dose of rosuvastatin (consult product literature); tipranavir possibly increases plasma concentration of ● **SIMVASTATIN**—avoid concomitant use; avoidance of tipranavir advised by manufacturer of ● **LOMITAPIDE** (plasma concentration of lomitapide possibly increased)
- Orlistat: absorption of tipranavir possibly reduced by ● **ORLISTAT**
- Ranolazine: tipranavir possibly increases plasma concentration of ● **RANOLAZINE**—manufacturer of ranolazine advises avoid concomitant use
- ▶ Sildenafil: manufacturer of tipranavir advises avoid concomitant use of **SILDENAFIL** for pulmonary arterial hypertension
- ▶ Sympathomimetics, Beta<sub>2</sub>: manufacturer of tipranavir advises avoid concomitant use with **SALMETEROL**
- Ulcer-healing Drugs: tipranavir reduces plasma concentration of ● **ESOMEPRAZOLE** and ● **OMEPRAZOLE**
- ▶ Vardenafil: manufacturer of tipranavir advises caution with **VARDENAFIL**

**Tipranavir** (continued)

- ▶ Vitamins: increased risk of bleeding when tipranavir given with high doses of **VITAMIN E**
- Tirofiban**
  - ▶ Iloprost: increased risk of bleeding when tirofiban given with **ILOPROST**
- Tizanidine** see Muscle Relaxants
- Tobramycin** see Aminoglycosides
- Tocilizumab**
  - Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
  - Vaccines: risk of generalised infections when monoclonal antibodies given with live ● **VACCINES**—avoid concomitant use
- Tolazoline** see Alpha-blockers
- Tolbutamide** see Antidiabetics
- Tolcapone**
  - ▶ Antidepressants: avoid concomitant use of tolcapone with **MAOIS**
  - ▶ Memantine: effects of dopaminergics possibly enhanced by **MEMANTINE**
  - ▶ Methyl dopa: antiparkinsonian effect of dopaminergics antagonised by **METHYLDOPA**
- Tolfenamic Acid** see NSAIDs
- Tolterodine** see Antimuscarinics
- Tolvaptan**
  - ▶ Antibacterials: plasma concentration of tolvaptan reduced by **RIFAMPICIN**
  - ▶ Antifungals: plasma concentration of tolvaptan increased by **KETOCONAZOLE**—manufacturer of ketoconazole advises avoid concomitant use
  - ▶ Cardiac Glycosides: tolvaptan increases plasma concentration of **DIGOXIN** (increased risk of toxicity)
  - Grapefruit Juice: plasma concentration of tolvaptan increased by ● **GRAPEFRUIT JUICE**—avoid concomitant use
  - ▶ Lipid-regulating Drugs: separating administration from tolvaptan by 12 hours advised by manufacturer of **LOMITAPIDE**
- Topiramate**
  - Antidepressants: anticonvulsant effect of antiepileptics possibly antagonised by **MAOIS** and ● **TRICYCLIC-RELATED ANTIDEPRESSANTS** (convulsive threshold lowered); anticonvulsant effect of antiepileptics antagonised by ● **SSRIS** and ● **TRICYCLICS** (convulsive threshold lowered)
  - ▶ Antidiabetics: topiramate possibly increases plasma concentration of **METFORMIN**; topiramate possibly reduces plasma concentration of **GLIBENCLAMIDE**
  - Antiepileptics: plasma concentration of topiramate often reduced by **CARBAMAZEPINE**; topiramate increases plasma concentration of ● **FOSPHENYTOIN** and ● **PHENYTOIN** (also plasma concentration of topiramate reduced); topiramate reduces plasma concentration of **PERAMPANEL**; plasma concentration of topiramate possibly reduced by **PHENOBARBITAL** and **PRIMIDONE**; hyperammonaemia and CNS toxicity reported when topiramate given with **SODIUM VALPROATE** and **VALPROIC ACID**
  - Antimalarials: anticonvulsant effect of antiepileptics antagonised by ● **MEFLOQUINE**
  - Antipsychotics: anticonvulsant effect of antiepileptics antagonised by ● **ANTIPSYCHOTICS** (convulsive threshold lowered)
  - ▶ Diuretics: plasma concentration of topiramate possibly increased by **HYDROCHLOROTHIAZIDE**
  - ▶ Lithium: topiramate possibly affects plasma concentration of **LITHIUM**
  - Oestrogens: topiramate accelerates metabolism of ● **OESTROGENS** (reduced contraceptive effect with combined oral contraceptives, contraceptive patches, and vaginal rings—see Contraceptive Interactions in BNF)
  - Orlistat: possible increased risk of convulsions when antiepileptics given with ● **ORLISTAT**
  - Progestogens: topiramate accelerates metabolism of ● **PROGESTOGENS** (reduced contraceptive effect with combined oral contraceptives, progestogen-only oral contraceptives, contraceptive patches, vaginal rings, etonogestrel-releasing implant, and emergency hormonal contraception—see Contraceptive Interactions in BNF)

**Torsemide** see Diuretics

### Toremifene

- Anticoagulants: toremifene possibly enhances anticoagulant effect of ● **COUMARINS**
- ▶ Antiepileptics: metabolism of toremifene possibly accelerated by **CARBAMAZEPINE** (reduced plasma concentration); metabolism of toremifene possibly accelerated by **FOSPHENYTOIN** and **PHENYTOIN**; metabolism of toremifene accelerated by **PHENOBARBITAL** and **PRIMIDONE** (reduced plasma concentration)
- Cytotoxics: possible increased risk of ventricular arrhythmias when toremifene given with ● **VANDETANIB**—avoid concomitant use
- ▶ Diuretics: increased risk of hypercalcaemia when toremifene given with **THIAZIDES AND RELATED DIURETICS**

### Trabectedin

- Alcohol: manufacturer of trabectedin advises avoid concomitant use with ● **ALCOHOL**
- Antibacterials: plasma concentration of trabectedin reduced by ● **RIFAMPICIN**
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Vaccines: risk of generalised infections when trabectedin given with live ● **VACCINES**—avoid concomitant use

**Tramadol** see Opioid Analgesics

**Trandolapril** see ACE Inhibitors

**Tranylcypromine** see MAOIs

### Trastuzumab

- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Vaccines: risk of generalised infections when monoclonal antibodies given with live ● **VACCINES**—avoid concomitant use

**Trazodone** see Antidepressants, Tricyclic (related)

**Tretinoin** see Retinoids

**Triamcinolone** see Corticosteroids

**Triamterene** see Diuretics

### Trientine

- ▶ Iron Salts: trientine reduces absorption of *oral* **IRON SALTS**
- ▶ Zinc: trientine reduces absorption of **ZINC**, also absorption of trientine reduced by zinc

**Trifluoperazine** see Antipsychotics

**Trihexyphenidyl** see Antimuscarinics

### Trimethoprim

- ▶ ACE Inhibitors: possible increased risk of hyperkalaemia when trimethoprim given with **ACE INHIBITORS**
- ▶ Angiotensin-II Receptor Antagonists: possible increased risk of hyperkalaemia when trimethoprim given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- ▶ Anti-arrhythmics: possible increased risk of ventricular arrhythmias when trimethoprim (as co-trimoxazole) given with **AMIODARONE**—manufacturer of amiodarone advises avoid concomitant use of co-trimoxazole
- ▶ Antibacterials: plasma concentration of trimethoprim possibly reduced by **RIFAMPICIN**; plasma concentration of both drugs may increase when trimethoprim given with **DAPSONE**
- ▶ Anticoagulants: trimethoprim possibly enhances anticoagulant effect of **COUMARINS**
- ▶ Antidiabetics: trimethoprim possibly enhances hypoglycaemic effect of **REPAGLINIDE**—manufacturer advises avoid concomitant use; trimethoprim rarely enhances the effects of **SULFONYLUREAS**
- Antiepileptics: trimethoprim increases plasma concentration of ● **FOSPHENYTOIN** and ● **PHENYTOIN** (also increased antifolate effect)
- Antimalarials: increased antifolate effect when trimethoprim given with ● **PYRIMETHAMINE**
- ▶ Antivirals: trimethoprim (as co-trimoxazole) increases plasma concentration of **LAMIVUDINE**—avoid concomitant use of high-dose co-trimoxazole
- Azathioprine: increased risk of haematological toxicity when trimethoprim (also with co-trimoxazole) given with ● **AZATHIOPRINE**
- ▶ Cardiac Glycosides: trimethoprim possibly increases plasma concentration of **DIGOXIN**

**Trimethoprim** (continued)

- Ciclosporin: increased risk of nephrotoxicity when trimethoprim given with ● **CYCLOSPORIN**, also plasma concentration of ciclosporin reduced by *intravenous* trimethoprim
- Cytotoxics: increased risk of haematological toxicity when trimethoprim (also with co-trimoxazole) given with ● **MERCAPTOPURINE** or ● **METHOTREXATE**
- ▶ Diuretics: increased risk of hyperkalaemia when trimethoprim given with **EPLERENONE**; possible increased risk of hyperkalaemia when trimethoprim given with **SPIRONOLACTONE**
- ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Trimipramine** see Antidepressants, Tricyclic

### Tripotassium Dicitratobismuthate

- ▶ Antibacterials: tripotassium dicitratobismuthate reduces absorption of **TETRACYCLINES**

**Tropicamide** see Antimuscarinics

**Trosium** see Antimuscarinics

**Typhoid Vaccine (oral)** see Vaccines

**Typhoid Vaccine (parenteral)** see Vaccines

### Ubidecarenone

- ▶ Anticoagulants: ubidecarenone may enhance or reduce anticoagulant effect of **WARFARIN**

**Ulcer-healing Drugs** see Histamine H<sub>2</sub>-antagonists, Proton Pump Inhibitors, Sucralfate, and Tripotassium Dicitratobismuthate

### Ulipristal

- Antibacterials: manufacturer of *low-dose* ulipristal advises avoid concomitant use with **CLARITHROMYCIN** and **TELITHROMYCIN**; plasma concentration of *low-dose* ulipristal increased by **ERYTHROMYCIN**—manufacturer of *low-dose* ulipristal advises avoid concomitant use; manufacturer of ulipristal advises avoid concomitant use with ● **RIFAMPICIN** (contraceptive effect of ulipristal possibly reduced)
  - ▶ Anticoagulants: manufacturer of ulipristal advises give **DABIGATRAN** at least 1.5 hours before or after ulipristal
  - Antidepressants: manufacturer of ulipristal advises avoid concomitant use with ● **ST JOHN'S WORT** (contraceptive effect of ulipristal possibly reduced)
  - Antiepileptics: manufacturer of ulipristal advises avoid concomitant use with ● **CARBAMAZEPINE**, ● **FOSPHENYTOIN**, ● **PHENOBARBITAL**, ● **PHENYTOIN** and ● **PRIMIDONE** (contraceptive effect of ulipristal possibly reduced)
  - ▶ Antifungals: plasma concentration of *low-dose* ulipristal increased by **KETOCONAZOLE**—manufacturer of *low-dose* ulipristal advises avoid concomitant use; manufacturer of ulipristal advises avoid concomitant use with **ITRACONAZOLE**
  - ▶ Antihistamines: manufacturer of ulipristal advises give **FEXOFENADINE** at least 1.5 hours before or after ulipristal
  - Antivirals: manufacturer of ulipristal advises avoid concomitant use with ● **RITONAVIR** (contraceptive effect of ulipristal possibly reduced)
  - ▶ Calcium-channel Blockers: manufacturer of *low-dose* ulipristal advises avoid concomitant use with **VERAPAMIL**
  - ▶ Cardiac Glycosides: manufacturer of ulipristal advises give **DIGOXIN** at least 1.5 hours before or after ulipristal
  - ▶ Grapefruit Juice: manufacturer of *low-dose* ulipristal advises avoid concomitant use with **GRAPEFRUIT JUICE**
  - Progestogens: ulipristal possibly reduces contraceptive effect of ● **PROGESTOGENS**
- Umeclidinium** see Antimuscarinics
- Ursodeoxycholic Acid** see Bile Acids
- ### Ustekinumab
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
  - Vaccines: risk of generalised infections when monoclonal antibodies given with live ● **VACCINES**—avoid concomitant use
- ### Vaccines
- Abatacept: risk of generalised infections when live vaccines given with ● **ABATACEPT**—avoid concomitant use
  - ▶ Aminophylline: influenza vaccine possibly increases plasma concentration of **AMINOPHYLLINE**

**Vaccines** (continued)

- Anakinra: risk of generalised infections when live vaccines given with ● **ANAKINRA**—avoid concomitant use
- ▶ Antibacterials: oral typhoid vaccine inactivated by **ANTIBACTERIALS**—see under Typhoid Vaccine in BNF
- ▶ Anticoagulants: influenza vaccine possibly enhances anticoagulant effect of **WARFARIN**
- ▶ Antiepileptics: influenza vaccine enhances effects of **FOSPHENYTOIN** and **PHENYTOIN**
- ▶ Antimalarials: oral typhoid vaccine inactivated by **ANTIMALARIALS**—see under Typhoid Vaccine in BNF
- Corticosteroids: immune response to vaccines impaired by high doses of ● **CORTICOSTEROIDS**—avoid concomitant use with live vaccines
- Cytotoxics: risk of generalised infections when live vaccines given with ● **DOXORUBICIN**, ● **MONOCLONAL ANTIBODIES**, ● **PIXANTRONE** or ● **TRABECTEDIN**—avoid concomitant use
- Dextrazoxane: risk of generalised infections when live vaccines given with ● **DEXTRAZOXANE**—avoid concomitant use
- Etanercept: risk of generalised infections when live vaccines given with ● **ETANERCEPT**—avoid concomitant use
- Immunoglobulins: impaired immune response to oral poliomyelitis vaccine might occur with ● **ANTI-D IMMUNOGLOBULINS** and ● **NORMAL IMMUNOGLOBULIN**—give oral poliomyelitis vaccine at least 3 weeks before or 3 months after anti-d immunoglobulins and normal immunoglobulin; impaired immune response to BCG vaccine, MMR vaccine, oral typhoid vaccine, rotavirus vaccine, smallpox vaccine, varicella-zoster vaccine and yellow fever vaccine might occur with ● **ANTI-D IMMUNOGLOBULINS**—give BCG vaccine, MMR vaccine, oral typhoid vaccine, rotavirus vaccine, smallpox vaccine, varicella-zoster vaccine and yellow fever vaccine at least 3 weeks before or 3 months after anti-d immunoglobulins; impaired immune response to live influenza vaccine might occur with ● **ANTI-D IMMUNOGLOBULINS** and ● **NORMAL IMMUNOGLOBULIN**—give live influenza vaccine at least 3 weeks before or 3 months after anti-d immunoglobulins and normal immunoglobulin; impaired immune response to BCG vaccine, MMR vaccine, oral typhoid vaccine, rotavirus vaccine, smallpox vaccine, varicella-zoster vaccine and yellow fever vaccine might occur with ● **NORMAL IMMUNOGLOBULIN**—give BCG vaccine, MMR vaccine, oral typhoid vaccine, rotavirus vaccine, smallpox vaccine, varicella-zoster vaccine and yellow fever vaccine at least 3 weeks before or 3 months after normal immunoglobulin
- ▶ Interferons: avoidance of vaccines advised by manufacturer of **INTERFERON GAMMA**
- Leflunomide: risk of generalised infections when live vaccines given with ● **LEFLUNOMIDE**—avoid concomitant use
- Teriflunomide: risk of generalised infections when live vaccines given with ● **TERIFLUNOMIDE**—avoid concomitant use
- ▶ Theophylline: influenza vaccine possibly increases plasma concentration of **THEOPHYLLINE**

**Valaciclovir**

- ▶ Aminophylline: valaciclovir possibly increases plasma concentration of **AMINOPHYLLINE**
- ▶ Ciclosporin: increased risk of nephrotoxicity when valaciclovir given with **CICLOSPORIN**
- ▶ Mycophenolate: plasma concentration of valaciclovir increased by **MYCOPHENOLATE**, also plasma concentration of inactive metabolite of mycophenolate increased
- ▶ Tacrolimus: possible increased risk of nephrotoxicity when valaciclovir given with **TACROLIMUS**
- ▶ Theophylline: valaciclovir possibly increases plasma concentration of **THEOPHYLLINE**

**Valganciclovir**

- Antibacterials: increased risk of convulsions when valganciclovir given with ● **IMIPENEM** with **CILASTATIN**
- Antivirals: valganciclovir possibly increases plasma concentration of **DIDANOSINE**; profound myelosuppression when valganciclovir given with ● **ZIDOVUDINE** (if possible avoid concomitant administration, particularly during initial valganciclovir therapy)
- ▶ Mycophenolate: plasma concentration of valganciclovir possibly increased by **MYCOPHENOLATE**, also plasma

**Valganciclovir****Mycophenolate** (continued)

- concentration of inactive metabolite of mycophenolate possibly increased
- ▶ Tacrolimus: possible increased risk of nephrotoxicity when valganciclovir given with **TACROLIMUS**

**Valproic Acid**

- ▶ Analgesics: effects of valproic acid enhanced by **ASPIRIN**
- Antibacterials: metabolism of valproic acid possibly inhibited by **ERYTHROMYCIN** (increased plasma concentration); avoidance of valproic acid advised by manufacturer of ● **PIVMECILLINAM**; plasma concentration of valproic acid reduced by ● **CARBAPENEMS**—avoid concomitant use
- ▶ Anticoagulants: valproic acid possibly enhances anticoagulant effect of **COUMARINS**
- Antidepressants: anticonvulsant effect of antiepileptics possibly antagonised by **MAOIS** and ● **TRICYCLIC-RELATED ANTIDEPRESSANTS** (convulsive threshold lowered); anticonvulsant effect of antiepileptics antagonised by ● **SSRIS** and ● **TRICYCLICS** (convulsive threshold lowered)
- Antiepileptics: plasma concentration of valproic acid reduced by **CARBAMAZEPINE**, also plasma concentration of active metabolite of carbamazepine increased; valproic acid possibly increases plasma concentration of **ETHOSUXIMIDE**; valproic acid increases or possibly decreases plasma concentration of **FOSPHENYTOIN** and **PHENYTOIN**, also plasma concentration of valproic acid reduced; valproic acid increases plasma concentration of ● **LAMOTRIGINE** (increased risk of toxicity—reduce lamotrigine dose); valproic acid sometimes reduces plasma concentration of an active metabolite of **OXCARBAZEPINE**; valproic acid increases plasma concentration of **PHENOBARBITAL** and **PRIMIDONE** (also plasma concentration of valproic acid reduced); valproic acid possibly increases plasma concentration of **RUFINAMIDE** (reduce dose of rufinamide); hyperammonaemia and CNS toxicity reported when valproic acid given with **TOPIRAMATE**
- Antimalarials: anticonvulsant effect of antiepileptics antagonised by ● **MEFLOQUINE**
- Antipsychotics: anticonvulsant effect of antiepileptics antagonised by ● **ANTIPSYCHOTICS** (convulsive threshold lowered); valproic acid possibly increases or decreases plasma concentration of **CLOZAPINE**; increased risk of side-effects including neutropenia when valproic acid given with ● **OLANZAPINE**
- ▶ Antivirals: plasma concentration of valproic acid possibly reduced by **RITONAVIR**; valproic acid possibly increases plasma concentration of **ZIDOVUDINE** (increased risk of toxicity)
- ▶ Anxiolytics and Hypnotics: plasma concentration of valproic acid possibly increased by **CLOBAZAM**; increased risk of side-effects when valproic acid given with **CLONAZEPAM**; valproic acid possibly increases plasma concentration of **DIAZEPAM** and **LORAZEPAM**
- ▶ Bupropion: valproic acid inhibits the metabolism of **BUPROPION**
- Cytotoxics: valproic acid increases plasma concentration of **TEMOZOLOMIDE**
- ▶ Lipid-regulating Drugs: absorption of valproic acid possibly reduced by **COLESTYRAMINE**
- ▶ Oestrogens: plasma concentration of valproic acid possibly reduced by **ETHINYLESTRADIOL**
- Orlistat: possible increased risk of convulsions when antiepileptics given with ● **ORLISTAT**
- ▶ Sodium Benzoate: valproic acid possibly reduces effects of **SODIUM BENZOATE**
- Sodium Oxybate: valproic acid increases the plasma concentration of ● **SODIUM OXYBATE** (see under Sodium Oxybate, p. 425)
- ▶ Sodium Phenylbutyrate: valproic acid possibly reduces effects of **SODIUM PHENYLBUTYRATE**
- Ulcer-healing Drugs: metabolism of valproic acid inhibited by ● **CIMETIDINE** (increased plasma concentration)

**Valsartan** see Angiotensin-II Receptor Antagonists**Vancomycin**

- ▶ Anaesthetics, General: hypersensitivity-like reactions can occur when *intravenous* vancomycin given with **GENERAL ANAESTHETICS**

**Vancomycin** (continued)

- Antibacterials: increased risk of nephrotoxicity and ototoxicity when vancomycin given with ● **AMINOGLYCOSIDES**, **CAPREOMYCIN** or **COLISTIMETHATE SODIUM**; increased risk of nephrotoxicity when vancomycin given with **POLYMYXINS**
- ▶ Antifungals: possible increased risk of nephrotoxicity when vancomycin given with **AMPHOTERICIN**
- Ciclosporin: increased risk of nephrotoxicity when vancomycin given with ● **CICLOSPORIN**
- ▶ Cytotoxics: increased risk of nephrotoxicity and possibly of ototoxicity when vancomycin given with **CISPLATIN**
- Diuretics: increased risk of ototoxicity when vancomycin given with ● **LOOP DIURETICS**
- ▶ Lipid-regulating Drugs: effects of *oral* vancomycin antagonised by **COLESTYRAMINE**
- Muscle Relaxants: vancomycin enhances effects of ● **SUXAMETHONIUM**
- ▶ Tacrolimus: possible increased risk of nephrotoxicity when vancomycin given with **TACROLIMUS**
- ▶ Vaccines: antibacterials inactivate **ORAL TYPHOID VACCINE**—see under Typhoid Vaccine in BNF

**Vandetanib**

- Analgesics: possible increased risk of ventricular arrhythmias when vandetanib given with ● **METHADONE**—avoid concomitant use
- Anti-arrhythmics: possible increased risk of ventricular arrhythmias when vandetanib given with ● **AMIODARONE** or ● **DISOPYRAMIDE**—avoid concomitant use
- Antibacterials: possible increased risk of ventricular arrhythmias when vandetanib given with *parenteral* ● **ERYTHROMYCIN**—avoid concomitant use; possible increased risk of ventricular arrhythmias when vandetanib given with ● **MOXIFLOXACIN**—avoid concomitant use; plasma concentration of vandetanib reduced by ● **RIFAMPICIN**—manufacturer of vandetanib advises avoid concomitant use
- ▶ Antidepressants: manufacturer of vandetanib advises avoid concomitant use with **ST JOHN'S WORT** (plasma concentration of vandetanib possibly reduced)
- ▶ Antidiabetics: vandetanib possibly increases plasma concentration of **METFORMIN** (consider reducing dose of metformin)
- ▶ Antiepileptics: manufacturer of vandetanib advises avoid concomitant use with **CARBAMAZEPINE**, **PHENOBARBITAL** and **PRIMIDONE** (plasma concentration of vandetanib possibly reduced)
- Antihistamines: possible increased risk of ventricular arrhythmias when vandetanib given with ● **MIZOLASTINE**—avoid concomitant use
- Antimalarials: possible increased risk of ventricular arrhythmias when vandetanib given with ● **ARTEMETHER WITH LUMEFANTRINE**—avoid concomitant use
- Antipsychotics: possible increased risk of ventricular arrhythmias when vandetanib given with ● **AMISULPRIDE**, ● **CHLORPROMAZINE**, ● **HALOPERIDOL**, ● **PIMOSIDE**, ● **SULPIRIDE** or ● **ZUCLOPENTHIXOL**—avoid concomitant use; avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Beta-blockers: possible increased risk of ventricular arrhythmias when vandetanib given with ● **SOTALOL**—avoid concomitant use
- ▶ Cardiac Glycosides: vandetanib increases plasma concentration of **DIGOXIN**—possible increased risk of bradycardia
- Cytotoxics: possible increased risk of ventricular arrhythmias when vandetanib given with ● **ARSENIC TRIOXIDE**—avoid concomitant use
- Hormone Antagonists: possible increased risk of ventricular arrhythmias when vandetanib given with ● **TOREMIFENE**—avoid concomitant use
- 5HT<sub>2</sub>-receptor Antagonists: increased risk of ventricular arrhythmias when vandetanib given with ● **ONDANSETRON**—avoid concomitant use
- Pentamidine Isetionate: possible increased risk of ventricular arrhythmias when vandetanib given with ● **PENTAMIDINE ISETIONATE**—avoid concomitant use

**Vardenafil**

- Alpha-blockers: enhanced hypotensive effect when vardenafil given with ● **ALPHA-BLOCKERS**—when patient is stable on the alpha blocker initiate vardenafil at the lowest possible dose—separate doses by 6 hours (except with tamsulosin)
- ▶ Anti-arrhythmics: avoidance of vardenafil advised by manufacturer of **DISOPYRAMIDE** (risk of ventricular arrhythmias)
- ▶ Antibacterials: plasma concentration of vardenafil possibly increased by **CLARITHROMYCIN** (consider reducing initial dose of vardenafil); plasma concentration of vardenafil increased by **ERYTHROMYCIN** (reduce dose of vardenafil)
- Antifungals: plasma concentration of vardenafil increased by ● **KETOCONAZOLE**—avoid concomitant use; plasma concentration of vardenafil possibly increased by ● **ITRACONAZOLE**—avoid concomitant use
- Antivirals: plasma concentration of vardenafil possibly increased by **FOAMPRENAVIR**; plasma concentration of vardenafil increased by ● **INDINAVIR** and ● **RITONAVIR**—avoid concomitant use; increased risk of ventricular arrhythmias when vardenafil given with ● **SAQUINAVIR**—avoid concomitant use; avoidance of vardenafil advised by manufacturer of ● **TELAPREVIR**; caution with vardenafil advised by manufacturer of **TIPRANAVIR**
- ▶ Calcium-channel Blockers: enhanced hypotensive effect when vardenafil given with **NIFEDIPINE**
- Cobicistat: plasma concentration of vardenafil possibly increased by ● **COBICISTAT**—manufacturer of cobicistat advises reduce dose of vardenafil (consult cobicistat product literature)
- ▶ Dapoxetine: avoidance of vardenafil advised by manufacturer of **DAPOXETINE**
- Grapefruit Juice: plasma concentration of vardenafil possibly increased by ● **GRAPEFRUIT JUICE**—avoid concomitant use
- Nicorandil: possible increased hypotensive effect when vardenafil given with ● **NICORANDIL**—avoid concomitant use
- Nitrates: possible increased hypotensive effect when vardenafil given with ● **NITRATES**—avoid concomitant use
- Riociguat: possible enhanced hypotensive effect when vardenafil given with ● **RIOCIGUAT**—avoid concomitant use

**Varicella-zoster Vaccine** see Vaccines**Vasodilator Antihypertensives**

- ▶ ACE Inhibitors: enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **ACE INHIBITORS**
- ▶ Adrenergic Neurone Blockers: enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **ADRENERGIC NEURONE BLOCKERS**
- ▶ Alcohol: enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **ALCOHOL**
- ▶ Aldesleukin: enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **ALDESLEUKIN**
- ▶ Alpha-blockers: enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **ALPHA-BLOCKERS**
- ▶ Anaesthetics, General: enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **GENERAL ANAESTHETICS**
- ▶ Analgesics: hypotensive effect of hydralazine, minoxidil and sodium nitroprusside antagonised by **NSAIDs**
- ▶ Angiotensin-II Receptor Antagonists: enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **ANGIOTENSIN-II RECEPTOR ANTAGONISTS**
- ▶ Antidepressants: enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **MAOIs**; enhanced hypotensive effect when hydralazine or sodium nitroprusside given with **TRICYCLIC-RELATED ANTIDEPRESSANTS**
- ▶ Antipsychotics: enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **PHENOTHIAZINES**
- ▶ Anxiolytics and Hypnotics: enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **ANXIOLYTICS AND HYPNOTICS**
- ▶ Beta-blockers: enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **BETA-BLOCKERS**



**Vasodilator Antihypertensives** (continued)

- Calcium-channel Blockers: enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **CALCIUM-CHANNEL BLOCKERS**
- Clonidine: enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **CLONIDINE**
- Corticosteroids: hypotensive effect of hydralazine, minoxidil and sodium nitroprusside antagonised by **CORTICOSTEROIDS**
- Diazoxide: enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **DIAZOXIDE**
- Diuretics: enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **DIURETICS**
- Dopaminergics: enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **CO-BENELDOPA**; enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **CO-CARELDOPA**; enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **LEVODOPA**
- Methyldopa: enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **METHYLDOPA**
- Moxisylyte: enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **MOXISYLYTE**
- Moxonidine: enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **MOXONIDINE**
- Muscle Relaxants: enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **BACLOFEN**; enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **TIZANIDINE**
- Nicorandil: possible enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **NICORANDIL**
- Nitrates: enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **NITRATES**
- Oestrogens: hypotensive effect of hydralazine, minoxidil and sodium nitroprusside antagonised by **OESTROGENS**
- Prostaglandins: enhanced hypotensive effect when hydralazine, minoxidil or sodium nitroprusside given with **ALPROSTADIL**
- Vasodilator Antihypertensives: enhanced hypotensive effect when hydralazine given with **MINOXIDIL** or **SODIUM NITROPRUSSIDE**; enhanced hypotensive effect when minoxidil given with **SODIUM NITROPRUSSIDE**

**Vecuronium** see Muscle Relaxants

**Vedolizumab**

- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Vaccines: risk of generalised infections when monoclonal antibodies given with live ● **VACCINES**—avoid concomitant use

**Vemurafenib**

- Antibacterials: manufacturer of vemurafenib advises avoid concomitant use with **RIFABUTIN** and **RIFAMPICIN**
- Anticoagulants: vemurafenib possibly enhances anticoagulant effect of ● **WARFARIN**
- Antidepressants: manufacturer of vemurafenib advises avoid concomitant use with **ST JOHN'S WORT**
- Antiepileptics: manufacturer of vemurafenib advises avoid concomitant use with **CARBAMAZEPINE**, **FOSPHENYTOIN** and **PHENYTOIN**
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Cytotoxics: avoidance of vemurafenib advised by manufacturer of **IPILIMUMAB**
- Oestrogens: manufacturer of vemurafenib advises contraceptive effect of ● **OESTROGENS** possibly reduced
- Progestogens: manufacturer of vemurafenib advises contraceptive effect of ● **PROGESTOGENS** possibly reduced

**Venlafaxine**

- Analgesics: increased risk of bleeding when venlafaxine given with ● **NSAIDS** or ● **ASPIRIN**; possible increased serotonergic effects when SSRI-related antidepressants given with **FENTANYL**; possible increased serotonergic effects when venlafaxine given with **TRAMADOL**
- Anticoagulants: venlafaxine possibly enhances anticoagulant effect of ● **WARFARIN**; possible increased risk of bleeding when SSRI-related antidepressants given with ● **DABIGATRAN**

**Venlafaxine** (continued)

- Antidepressants: possible increased serotonergic effects when venlafaxine given with **ST JOHN'S WORT**, **DULOXETINE** or **MIRTAZAPINE**; enhanced CNS effects and toxicity when venlafaxine given with ● **MAOIS** (venlafaxine should not be started until 2 weeks after stopping MAOIs, avoid MAOIs for 1 week after stopping venlafaxine); after stopping SSRI-related antidepressants do not start ● **MOCLOBEMIDE** for at least 1 week
- Antimalarials: avoidance of antidepressants advised by manufacturer of ● **ARTEMETHER WITH LUMEFANTRINE** and ● **ARTENIMOL WITH PIPERAQUINE**
- Antipsychotics: venlafaxine increases plasma concentration of **HALOPERIDOL**
- Atomoxetine: possible increased risk of convulsions when antidepressants given with **ATOMOXETINE**
- Dopoxetine: possible increased risk of serotonergic effects when venlafaxine given with ● **DAPOXETINE** (manufacturer of dapoxetine advises venlafaxine should not be started until 1 week after stopping dapoxetine, avoid dapoxetine for 2 weeks after stopping venlafaxine)
- Dopaminergics: caution with venlafaxine advised by manufacturer of **ENTACAPONE**; increased risk of hypertension and CNS excitation when venlafaxine given with ● **SELEGILINE** (selegiline should not be started until 1 week after stopping venlafaxine, avoid venlafaxine for 2 weeks after stopping selegiline)
- 5HT<sub>2</sub>-receptor Agonists: possible increased serotonergic effects when venlafaxine given with **5HT<sub>2</sub> AGONISTS**
- 5HT<sub>2</sub>-receptor Antagonists: possible increased serotonergic effects when SSRI-related antidepressants given with **5HT<sub>2</sub> ANTAGONISTS**
- Lithium: possible increased serotonergic effects when venlafaxine given with **LITHIUM**
- Methylthionium: risk of CNS toxicity when SSRI-related antidepressants given with ● **METHYLTHIONIUM**—avoid concomitant use (if avoidance not possible, use lowest possible dose of methylthionium and observe patient for up to 4 hours after administration)

**Verapamil** see Calcium-channel Blockers

**Vigabatrin**

- Antidepressants: anticonvulsant effect of antiepileptics possibly antagonised by **MAOIS** and ● **TRICYCLIC-RELATED ANTIDEPRESSANTS** (convulsive threshold lowered); anticonvulsant effect of antiepileptics antagonised by ● **SSRIS** and ● **TRICYCLICS** (convulsive threshold lowered)
- Antiepileptics: vigabatrin reduces plasma concentration of **FOSPHENYTOIN** and **PHENYTOIN**
- Antimalarials: anticonvulsant effect of antiepileptics antagonised by ● **MEFLOQUINE**
- Antipsychotics: anticonvulsant effect of antiepileptics antagonised by ● **ANTIPSYCHOTICS** (convulsive threshold lowered)
- Orlistat: possible increased risk of convulsions when antiepileptics given with ● **ORLISTAT**

**Vilanterol** see Sympathomimetics, Beta<sub>2</sub>

**Vildagliptin** see Antidiabetics

**Vinblastine**

- Aldesleukin: avoidance of vinblastine advised by manufacturer of ● **ALDESLEUKIN**
- Antibacterials: toxicity of vinblastine increased by ● **ERYTHROMYCIN**—avoid concomitant use; possible increased risk of ventricular arrhythmias when vinblastine given with ● **DELAMANID**
- Antifungals: possible increased risk of vinblastine toxicity when given with ● **ITRACONAZOLE**; metabolism of vinblastine possibly inhibited by ● **POSACONAZOLE** (increased risk of neurotoxicity)
- Antimalarials: avoidance of vinblastine advised by manufacturer of ● **ARTENIMOL WITH PIPERAQUINE**
- Antipsychotics: avoid concomitant use of cytotoxics with ● **CLOZAPINE** (increased risk of agranulocytosis)
- Antivirals: plasma concentration of vinblastine possibly increased by **RITONAVIR**

**Vincristine**

- Antibacterials: possible increased risk of ventricular arrhythmias when vincristine given with • **DELANAMID**
- Antifungals: increased risk of vincristine toxicity when given with • **ITRACONAZOLE**; metabolism of vincristine possibly inhibited by • **POSACONAZOLE** (increased risk of neurotoxicity)
- Antimalarials: avoidance of vincristine advised by manufacturer of • **ARTENIMOL WITH PIPERAQUINE**
- Antipsychotics: avoid concomitant use of cytotoxics with • **CLOZAPINE** (increased risk of agranulocytosis)
- ▶ Calcium-channel Blockers: metabolism of vincristine possibly inhibited by **NIFEDIPINE**
- ▶ Cardiac Glycosides: vincristine possibly reduces absorption of **DIGOXIN** tablets

**Vindesine**

- Antibacterials: possible increased risk of ventricular arrhythmias when vindesine given with • **DELANAMID**
- Antifungals: possible increased risk of vindesine toxicity when given with • **ITRACONAZOLE**
- Antipsychotics: avoid concomitant use of cytotoxics with • **CLOZAPINE** (increased risk of agranulocytosis)

**Vinflunine**

- Antibacterials: plasma concentration of vinflunine possibly reduced by • **RIFAMPICIN**—manufacturer of vinflunine advises avoid concomitant use; increased risk of ventricular arrhythmias when vinflunine given with • **DELANAMID**
- Antidepressants: plasma concentration of vinflunine possibly reduced by • **ST JOHN'S WORT**—manufacturer of vinflunine advises avoid concomitant use
- Antifungals: plasma concentration of vinflunine increased by • **KETOCONAZOLE**—manufacturer of vinflunine advises avoid concomitant use; possible increased risk of vinflunine toxicity when given with • **ITRACONAZOLE**
- Antimalarials: avoidance of vinflunine advised by manufacturer of • **ARTENIMOL WITH PIPERAQUINE**
- Antipsychotics: avoid concomitant use of cytotoxics with • **CLOZAPINE** (increased risk of agranulocytosis)
- Antivirals: plasma concentration of vinflunine possibly increased by • **RITONAVIR**—manufacturer of vinflunine advises avoid concomitant use
- ▶ Grapefruit Juice: plasma concentration of vinflunine possibly increased by **GRAPEFRUIT JUICE**—manufacturer of vinflunine advises avoid concomitant use

**Vinorelbine**

- Antibacterials: possible increased risk of neutropenia when vinorelbine given with • **CLARITHROMYCIN**; possible increased risk of ventricular arrhythmias when vinorelbine given with • **DELANAMID**
- Antifungals: possible increased risk of vinorelbine toxicity when given with • **ITRACONAZOLE**
- Antimalarials: avoidance of vinorelbine advised by manufacturer of • **ARTENIMOL WITH PIPERAQUINE**
- Antipsychotics: avoid concomitant use of cytotoxics with • **CLOZAPINE** (increased risk of agranulocytosis)

**Vismodegib**

- Antibacterials: manufacturer of vismodegib advises avoid concomitant use with • **RIFAMPICIN** (plasma concentration of vismodegib possibly reduced)
- Antidepressants: manufacturer of vismodegib advises avoid concomitant use with • **ST JOHN'S WORT** (plasma concentration of vismodegib possibly reduced)
- Antiepileptics: manufacturer of vismodegib advises avoid concomitant use with • **CARBAMAZEPINE**, • **FOSPHENYTOIN** and • **PHENYTOIN** (plasma concentration of vismodegib possibly reduced)
- Antipsychotics: avoid concomitant use of cytotoxics with • **CLOZAPINE** (increased risk of agranulocytosis)

**Vitamin A** see Vitamins**Vitamin D** see Vitamins**Vitamin E** see Vitamins**Vitamin K (Phytomenadione)** see Vitamins**Vitamins**

- ▶ Antibacterials: absorption of vitamin A possibly reduced by **NEOMYCIN**

**Vitamins** (continued)

- Anticoagulants: vitamin E possibly enhances anticoagulant effect of • **COUMARINS**; vitamin K antagonises anticoagulant effect of • **COUMARINS** and • **PHENINDIONE**
  - ▶ Antiepileptics: alfalcidol, calcitriol, colecalciferol, dihydrotachysterol, ergocalciferol, paricalcitol or vitamin D requirements possibly increased when given with **CARBAMAZEPINE**; alfalcidol, calcitriol, colecalciferol, dihydrotachysterol, ergocalciferol, paricalcitol or vitamin D requirements possibly increased when given with **FOSPHENYTOIN**; alfalcidol, calcitriol, colecalciferol, dihydrotachysterol, ergocalciferol, paricalcitol or vitamin D requirements possibly increased when given with **PHENOBARBITAL**; alfalcidol, calcitriol, colecalciferol, dihydrotachysterol, ergocalciferol, paricalcitol or vitamin D requirements possibly increased when given with **PHENYTOIN**; alfalcidol, calcitriol, colecalciferol, dihydrotachysterol, ergocalciferol, paricalcitol or vitamin D requirements possibly increased when given with **PRIMIDONE**
  - ▶ Antifungals: plasma concentration of paricalcitol possibly increased by **KETOCONAZOLE**; effects of alfalcidol, calcitriol, colecalciferol, dihydrotachysterol, ergocalciferol, paricalcitol and vitamin D possibly reduced by **MICONAZOLE**
  - ▶ Antivirals: increased risk of bleeding when high doses of vitamin E given with **TIPRANAVIR**
  - ▶ Ciclosporin: vitamin E possibly affects plasma concentration of **CICLOSPORIN**
  - ▶ Cytotoxics: effects of alfalcidol, calcitriol, colecalciferol, dihydrotachysterol, ergocalciferol, paricalcitol and vitamin D possibly reduced by **DACTINOMYCIN**; avoidance of vitamin E advised by manufacturer of **IBRUTINIB**
  - ▶ Diuretics: increased risk of hypercalcaemia when alfalcidol, calcitriol, colecalciferol, dihydrotachysterol, ergocalciferol, paricalcitol or vitamin D given with **THIAZIDES AND RELATED DIURETICS**
  - ▶ Dopaminergics: pyridoxine reduces effects of **LEVODOPA** when given without dopa-decarboxylase inhibitor
  - ▶ Lipid-regulating Drugs: absorption of calcitriol possibly reduced by **COLESTYRAMINE** (give at least 1 hour before or 4 to 6 hours after colestyramine)
  - Retinoids: risk of hypervitaminosis A when vitamin A given with • **RETINOIDS**—avoid concomitant use
  - ▶ Selenium: ascorbic acid possibly reduces absorption of **SELENIUM** (give at least 4 hours apart)
  - ▶ Sevelamer: absorption of calcitriol reduced by **SEVELAMER** (give at least 1 hour before or 3 hours after sevelamer)
- Voriconazole** see Antifungals, Triazole
- Warfarin** see Coumarins
- Wasp Venom Extracts**
- ACE Inhibitors: possible severe anaphylactoid reaction when wasp venom extracts given with • **ACE INHIBITORS**
- Xipamide** see Diuretics
- Xylometazoline** see Sympathomimetics
- Yellow Fever Vaccine** see Vaccines
- Zafirlukast** see Leukotriene Receptor Antagonists
- Zaleplon** see Anxiolytics and Hypnotics
- Zidovudine**
- NOTE** Increased risk of toxicity with nephrotoxic and myelosuppressive drugs—for further details consult product literature
- ▶ Analgesics: increased risk of haematological toxicity when zidovudine given with **NSAIDs**; plasma concentration of zidovudine possibly increased by **METHADONE**
  - ▶ Antibacterials: absorption of zidovudine reduced by **CLARITHROMYCIN** tablets (give at least 2 hours apart); manufacturer of zidovudine advises avoid concomitant use with **RIFAMPICIN**
  - ▶ Antiepileptics: zidovudine increases or decreases plasma concentration of **FOSPHENYTOIN** and **PHENYTOIN**; plasma concentration of zidovudine possibly increased by **SODIUM VALPROATE** and **VALPROIC ACID** (increased risk of toxicity)
  - Antifungals: plasma concentration of zidovudine increased by • **FLUCONAZOLE** (increased risk of toxicity)
  - ▶ Antimalarials: increased antifolate effect when zidovudine given with **PYRIMETHAMINE**

**Zidovudine** (continued)

- Antivirals: profound myelosuppression when zidovudine given with ● **GANCICLOVIR** or ● **VALGANCICLOVIR** (if possible avoid concomitant administration, particularly during initial ganciclovir or valganciclovir therapy); increased risk of granulocytopenia when zidovudine given with ● **NEVIRAPINE**; increased risk of anaemia when zidovudine given with ● **RIBAVIRIN**—avoid concomitant use; zidovudine possibly inhibits effects of ● **STAVUDINE** (manufacturers advise avoid concomitant use); plasma concentration of zidovudine reduced by ● **TIPRANAVIR**
- Atovaquone: plasma concentration of zidovudine increased by **ATOVAQUONE** (increased risk of toxicity)
- Orlistat: absorption of zidovudine possibly reduced by ● **ORLISTAT**

**Zinc**

- Antibacterials: zinc reduces absorption of **CIPROFLOXACIN**, **LEVOFLOXACIN**, **MOXIFLOXACIN** and **OFLOXACIN**; zinc reduces absorption of **NORFLOXACIN** (give at least 2 hours apart); zinc reduces absorption of **TETRACYCLINES**, also absorption of zinc reduced by tetracyclines
- Calcium Salts: absorption of zinc reduced by **CALCIUM SALTS**
- Eltrombopag: zinc possibly reduces absorption of **ELTROMBOPAG** (give at least 4 hours apart)
- Iron Salts: absorption of zinc reduced by oral **IRON SALTS**, also absorption of oral iron salts reduced by zinc
- Penicillamine: absorption of zinc reduced by **PENICILLAMINE**, also absorption of penicillamine reduced by zinc
- Trientine: absorption of zinc reduced by **TRIENTINE**, also absorption of trientine reduced by zinc

**Zoledronic Acid** see Bisphosphonates**Zolmitriptan** see 5HT<sub>1</sub>-receptor Agonists (under HT)**Zolpidem** see Anxiolytics and Hypnotics**Zonisamide**

- Antidepressants: anticonvulsant effect of antiepileptics possibly antagonised by **MAOIs** and ● **TRICYCLIC-RELATED ANTIDEPRESSANTS** (convulsive threshold lowered); anticonvulsant effect of antiepileptics antagonised by ● **SSRIs** and ● **TRICYCLICS** (convulsive threshold lowered)
  - Antiepileptics: plasma concentration of zonisamide reduced by **CARBAMAZEPINE**, **FOSPHENYTOIN**, **PHENOBARBITAL**, **PHENYTOIN** and **PRIMIDONE**
  - Antimalarials: anticonvulsant effect of antiepileptics antagonised by ● **MEFLOQUINE**
  - Antipsychotics: anticonvulsant effect of antiepileptics antagonised by ● **ANTIPSYCHOTICS** (convulsive threshold lowered)
  - Diuretics: manufacturer of zonisamide advises avoid concomitant use with **CARBONIC ANHYDRASE INHIBITORS** in children
  - Orlistat: possible increased risk of convulsions when antiepileptics given with ● **ORLISTAT**
- Zopiclone** see Anxiolytics and Hypnotics
- Zuclopenthixol** see Antipsychotics