JUNE

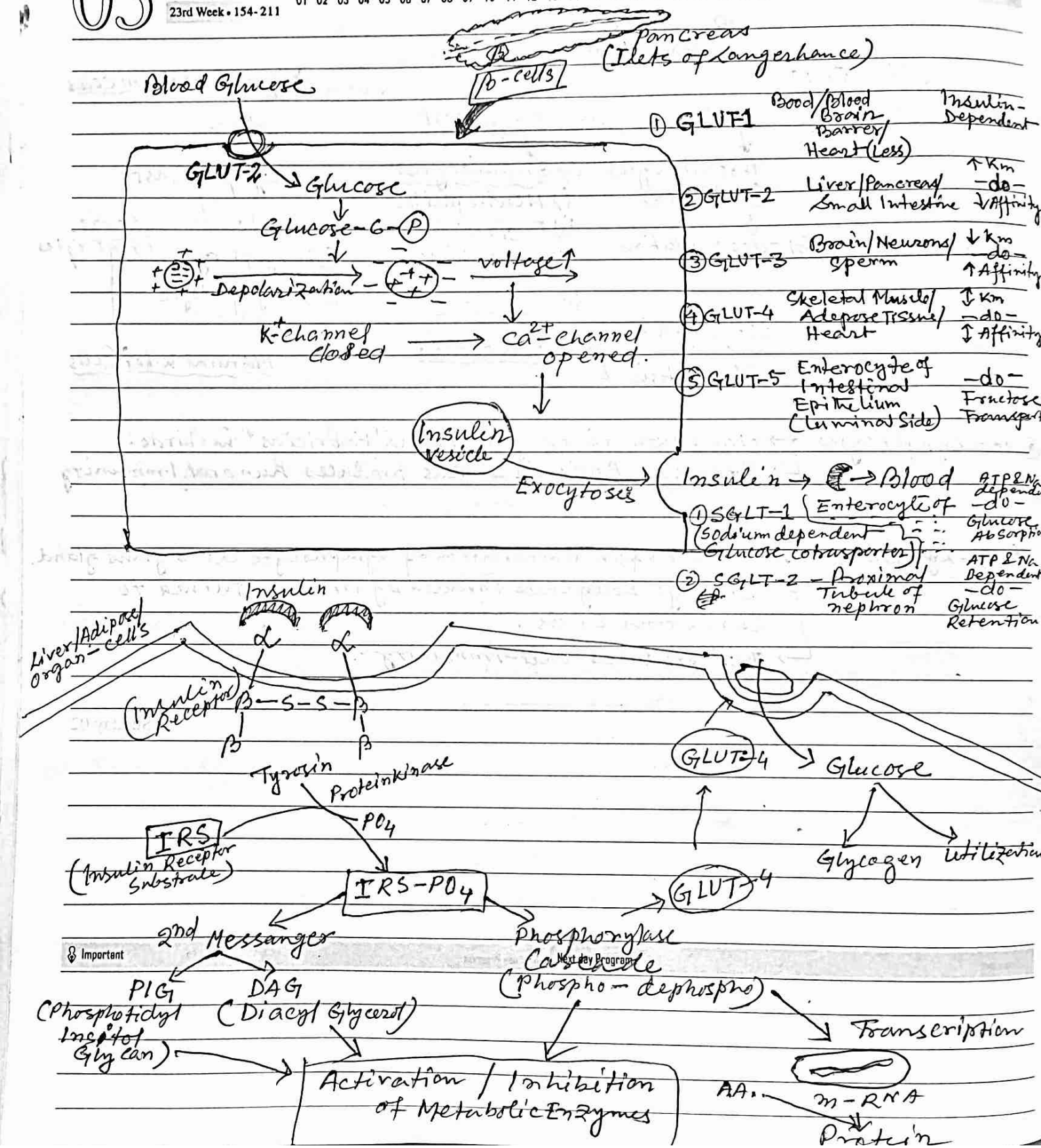
Hypoglycemics (Anti Diabetic)

2013

03 Monday
23rd Week • 154-211

June 2013

Sa 01 Su 02 Mo 03 Tu 04 We 05 Th 06 Fr 07 Sa 08 Su 09 Mo 10 Tu 11 We 12 Th 13 Fr 14 Sa 15 Su 16 Mo 17 Tu 18 We 19 Th 20 Fr 21 Sa 22 Su 23 Mo 24 Tu 25 We 26 Th 27 Fr 28 Sa 29 Su 30 Mo •



Important

Next day Program

Activation / Inhibition of Meterbolic Enzymes

Anabolic Reaction > **Catabolic Reaction**

↑ Glycogen
Protein
Fat

Glucose
Amino Acid
FFA, Glycerol ↓

- Glucose —(Glycogen synthetase)→ Glycogen
- Glucose —(Glucokinase)→ Glucose-6P

Activation of Enzymes

- Glycogen —(Phosphorylase)→ Glucose
- Protein / Fat / Glycerol —(Phospho enol Pyruvate Carboxy kinase)→ Glucose

Inhibition of Enzymes

Insulin

Liver
Glucose uptake ↑ → Glycogen
- ↓ Glycogenolysis
- ↓ Gluconeogenesis

Muscle
Glucose uptake ↑ → utilization
- Amino Acid ⟶ ↑ Protein

Adipose tissue
Glucose uptake ↑ → FAT / Glycogen
- ↓ Lipolysis
- ↓ FFA, Glycerol

INSULIN

05 Wednesday
23rd Week • 156-209

Insulin Preparations

SHORT	INTERMEDIATE	LONG
prompt In-Zn	In-Zn	Extended In-Zn
Semi Lente	Lente	ultra Lente
Regular	NPH/ISO (Neutral Protamine Hagedorn) (Isophane)	PZI (Protamine Zinc Insulin)

Tricks

Neutral pH – 7

7 — Intermediate — ISO

14

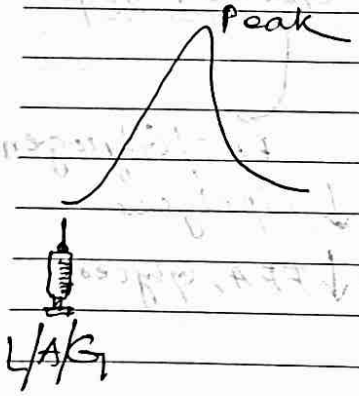
ZIP – long

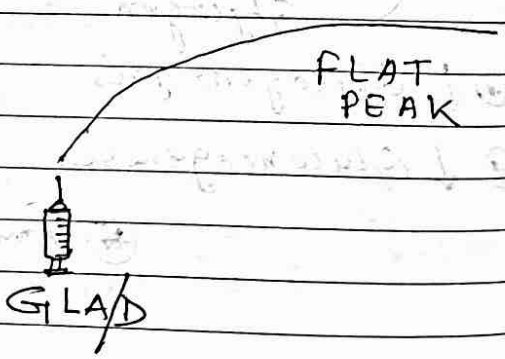
SHORT (Rapid Action)

LISPRO
ASPART
GLULISINE

LONG

GLARGINE
DETEMIR





Important

Next day Program :

DRUG INTERACTIONS OF INSULIN

SALA — ↑ Increases Sugar
SALI — ↓ decreases Sugar.

(*) Insulin Action ↓ decreased & ↑ (Sugar) increased by:—

SALA CO ORALLY (NEHI) THAI (ME) NEEDLE INFUSE (KIYA)

- SALA → Salbutamol
- CO → CorticoSteroids
- ORALLY → ORAL CONTRACEPTIVES
- THAI → THIAZIDES
- NEEDLE → NIFEDIPINE
- INFUSE → FRUSEMIDE

(TO) TOIN (HUA)

- TOIN → Phenytoin

(*) Insulin Action ↑ Increased & ↓ (Sugar) decreased by:—

BB Lit the File (of) Sali (So) (I) drink Alcoholic Quinine

- BB → β-Blocker
- Lit → Lithium
- the File → Theophylline
- Sali → Salicylates
- Alcoholic → Alcohol
- Quinine → Quinine

DRUG INTERACTION OF ORAL HYPOGLYCEMICS

~~(*) Repaglinide + Gemfibrozil :→ ↓↓ Glucose → Severe Hypoglycemia.~~

(*) Repaglinide (CYP3A4) → Metabolism

(–) (Fungal / Throw)
↓ Glucose ↑ Repaglinide
(Itra / Flu / Keto-conazole)
(Erythro / Azithro-mycin)

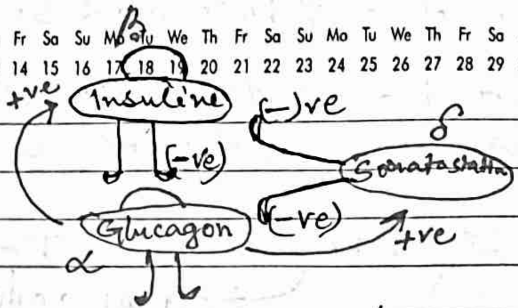
(+) (CAR – BAR – RIFLE)
↑ Glucose, ↓ Repaglinide
Carbamazepine
Barbiturates
Rifamycin

(*) ① Sulfonamide (Sulf ⟶ ↑ Sulf) — ↑ (Sulfonylurea) ↓ Glucose ↑ Insulin
② Salicylates (Sali ⟶ ↑ Sulf) — ↑ -do-
③ Chloramphenicol, Allopurinol, Dicumarol, MAO-inhibitors
[Chor, Almaresponi, Dicu, Maobadi) ——— ↑ -do-
④ Probenecid, Phenylbutazone ——— ↑ -do-

Tricks (b) – [illegible] (P) – [illegible]) self promotion ↑

ANTI DIABETICS

α – cells → Glucagon
β – Cells → Insuline
δ – Cells → Somatostatin



Classification :

A. Sulfonylureas :⇒ 1st Generation
Tolbutamide (Short acting)
Chlorpropamide

2nd Generation
(Long acting) Glibenclamide } 200 times potent than Tolbutamide
(Glyburide)
(Medium acting) { Glipizide
Gliclazide
Glimepiride } 3rd Generation (Long acting)

#Tricks (Saif Ali Yours) – (Generation) Ki Sugar Check Karo
1st Generation: { Toll but / color propar }
2nd Generation: Starts with (Gali ✗ Gli)

B. Biguanides :⇒ Phenformin
Metformin

#Tricks [Big van] owners — [Forming] Diabetes

C. Meglitinide Analogue :⇒ Repaglinide
Nateglinide

#Tricks [Mongli] pehr pehr pe [Gliding] Karta hai

D. Thiazolidinediones :⇒ Rosiglitazone
Pioglitazone

#Tricks [Kajol Dinner (Se) Divorce] (Kiya) == [Gitti] fill Kar raha hai Devgun.

E. α-Glucosidase Inhibitors :⇒ Acarbose, Miglitol, Vaglibose

Tricks
Bose — MIG-little-α-Diabetes.

(#) Paroxisome Proliferator activated Receptor
PPAR

(Agonist) PPAR-α ⟵ PPAR ⟶ PPAR-γ (Agonist)

Fibric acid derivatives
{ Clofibrate, Fenofibrate, Gemfibrozil }

Thiazolidinediones
{ Rosiglitazone, Pioglitazone }

MOA :- ⟶ [Inhibitory Effect on Complex-I & inhibit the rate of oxygen consumption & causing energy stress, Increase in AMP/ATP ratio, and activation of AMP-Kinase Resulting increase in Glucose utilisation.]

A. Bignanides
Thiazolidinediones (PPAR-γ Agonist GLUT-production↑) (PPAR-γ → mRNA Expression → at mitochondria)
} Act by ↑increasing Insuline Sensitivity. ↓decreasing Insulin Resistance.
(*) Do not causes HYPOGLYCAEMIA

B. Sulfonylureas (G→T)
Meglitinide
(Inhibit ATP-sensitive K^+ channel on the β-cells.)
} ↑increase Insulin Secretion from β-cell of pancreas.

(*) S/E – Causes HYPOGLYCAEMIA.

DRUGS — SIDE EFFECTS

(*) Bignanides & α-Glucosidase Inhibitors } S/E → GI disturbances

(*) Sulfonylureas, Meglitinide, Thiazolidinediones } S/E → Weight Gain.
Only Metformin → causes wt loss.
(*) Metformin preffed in Obase diabetes.

(*) Drug of choice for Newly diagnosed diabetes

(*) Diabetes with P.O.D. (Polycystic Ovary disease) ⇒ Effective treatment is by ⟶ Metformin & Thiazolidinediones (Glitazone)

(*) Thiazolidinediones → S/E → Liver toxicity.
→ Osteopenia (Risk of Fracture)
→ Pioglitazone → Fluid Retention (Edema)
→ Rosiglitazone → Anaemia

(*) can be used in Renal impairment (No need of dose adjustment)

(*) C/I → (Contraindication) ∴ ⇒ ① In Nursing Mother
② with oral contraceptives. (May decrease Estrogen Level)

↑ Insulin secretion
Hypoglycemics
- Meglitinide
- Sulfonylureas

↑ Insulin Sensitivity
Anti Hyperglycemics
- Biguanides
- Thiazolidinediones
- α-Glucosidase inhibitors

Acarbose — Starch → α-Amylase] Pancreatic
Reversal inhibition
Miglitol — oligosaccharides → α-Glucosidase] Intestine
Sugar

* Tricks
(Acar has reverse Green)

(*) α-Glucosidase Inhibitors + Sulphonylurea / Insulin
(or DPP-IV inhibitors)
S/E → Hypoglycemia
T/t → Glucose
↳ But not Sucrose
Glucose + Fructose

(*) DPP-IV Inhibitors :- (Dipeptydyl Peptidase-IV Inhibitors) :-

Sitagliptin (Vildagliptin, Linagliptin, Saxagliptin

(−) - - - - - - - - - - (+) →

DPP-IV ———— (−) ——→ Incretin Hormone (GLP-I)
[Glucagon like Peptide-I]

↓

↑ Insulin

↓

↓ Glucagon

(*) β-cell ——→ Insulin ⇒ Carbohydrate & Glucose Utilization & Metabolism. ⇒ ↓ Blood Glucose
Pancrease ——→ Amylin

Amylin Analogue = Pramlintide

(*) ~~Exena~~ Incretin Mimetic :- Exenatide
[50% Similar to GLP-I]

(*) Gestational Diabetes Mellitus (GDM) :- (In case of Pregnant Mother with diabetes mellitus)
Causes ⇒ Due to (↑) increase in Mother Glucose Level

↓

Important

(↑) Insulin Secretion in Baby

Next day Program

↓

Hypoglycemia to Baby

↳ Symptoms → (1) Shoulder damage in Baby (Shoulder dystocia)
(2) Macrosomia (Large body)

(*) T/t → Diet, Excercise,
Mother Insulin, Glyburide (Glybenclamide)