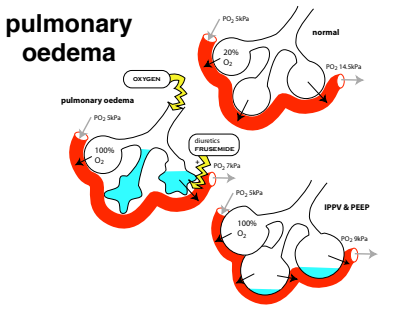
Respiratory Drugs

pulmonary oedema

- lungs full of fluid
  - hypoxia
    - cyanosis
    - unconsciousness
    - death

pulmonary oedema



pulmonary oedema

- frusemide
- oxygen
  - IPPV? ± PEEP?
- other drugs
  - colloids
  - morphine
  - inotropes?
  - steroids?

oxygen

- indications
  - hypoxia
- care
  - avoid excitement
  - avoid > 4 hours 100%
    - give air breaks
    - long term treatment use 50%
  - supports combustion!!

common problems

- upper respiratory tract infections
- tracheitis / bronchitis
- pneumonia
- airway hyperreactivity

secondary problems

- URT infections
  - inflamed mucous membranes
  - excessive mucus production
  - thick mucus
  - coughing

secondary problems

- bronchitis
  - inflamed mucous membranes
  - excessive mucus production
  - thick mucus
  - coughing
  - cilia not working
  - airway hyperreactivity

secondary problems

- pneumonia
  - hypoxia

treatment

- treat primary problem
  - but many infections are caused by viruses
- symptomatic treatment of secondary problem

expectorants

- increase amount of mucus
- decrease viscosity
- increase cilia action
- mucus must be coughed up

expectorants

- potassium iodide
- guaiphenesin
- volatile oils
  - menthol
  - eucalyptol

mucolytics

- acetylcysteine
- bromhexine

side effects

- guaiphenesin – mild effects ↓ BP ↑HR
- acetylcysteine – bronchospasms
  - nausea, vomiting

antitussives

- only used for unproductive coughing
- to allow animal to rest

antitussives

- local
  - local anaesthetics
- central
  - opioids
    - codeine
    - butorphanol

antitussives

- contraindications
  - productive coughing
  - chest injury
- care
  - vomiting

bronchodilators

- bronchoconstriction is a major problem in man (asthma)
- some importance in cats and horses
- dogs??
- not important in ruminants
- guinea pigs are the most susceptible species

bronchodilators

- sympathomimetics
- methylxanthines
- antimuscarinics
- glucocorticoids

sympathomimetics

- α1 agonists
  - pseudoephedrine
- β2 agonists
  - clenbuterol
  - terbutaline
  - adrenaline

pseudoephedrine

- vasoconstrictor
- precursor for methamphetamine

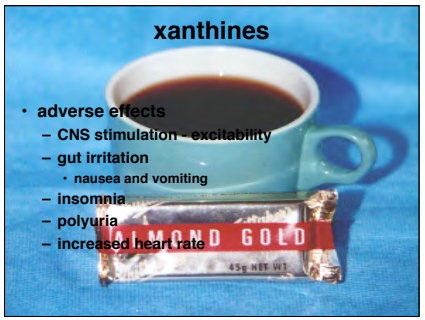
β2 agonists

- clenbuterol
  - adverse effects
    - tremors
    - sweating
    - restlessness
    - increased HR
    - abortion

xanthines

- theophylline
  - aminophylline
  - etamiphylline
- propentophylline
- (theobromine)
- (caffeine)

xanthines



- adverse effects
  - CNS stimulation - excitability
  - gut irritation
    - nausea and vomiting
  - insomnia
  - polyuria
  - increased heart rate

antimuscarinics

- atropine
  - historically used in horses
  - reduces secretions
  - increases viscosity of mucus
  - may be useful as an adjunct to other drugs
  - adverse effects
    - dry mouth, dysphagia, constipation, vomiting, thirst, sedation, ↑ heart rate, blurred vision, etc.

antimuscarinics

- propantheline
  - abused in horses
  - “blue magic”

glucocorticoids

- betamethasone
- dexamethasone
  - at normal doses, reduce bronchoconstrictor inflammmatory mediators

antihistamines

- mainly used for allergic reactions
- often included in human cough remedies - other effects?
- sometimes used in acute respiratory infections

histamine

- released from mast cells
- lungs, skin, gut, CNS
- species differences in response
  - mice very resistant
  - guinea pigs very susceptible
  - dogs act more like guinea pigs

histamine receptors

- H1 - skin, smooth muscle
- H2 - gastric parietal cells
- H3 - presynaptic on neurones (inhibition)

H1 antagonists

- promethazine
- chlorpheniramine
- mepyramine
- diphenhydramine

cromoglycate

- blocks release of inflammatory mediators
- sometimes used in horses with chronic obstructive pulmonary disease
- given as an aerosol
- preventative only

respiratory stimulants

- act on medulla
- doxapram
- obsolete
  - nikethamide
  - bemegride

respiratory system

- antibiotics are given for infections - stop secondary bacterial infections after viruses
- expectorants are used to loosen and remove mucus
- codeine and butorphanol stop unproductive coughing
- animals with fluid in the lungs require oxygen and sometimes diuretics