

A close-up photograph of a single, large, red mushroom with numerous white spots on its cap. The mushroom is growing on a bed of dry, brown pine needles. The text "Respiratory Drugs" is overlaid in the center of the image in a bold, yellow font.

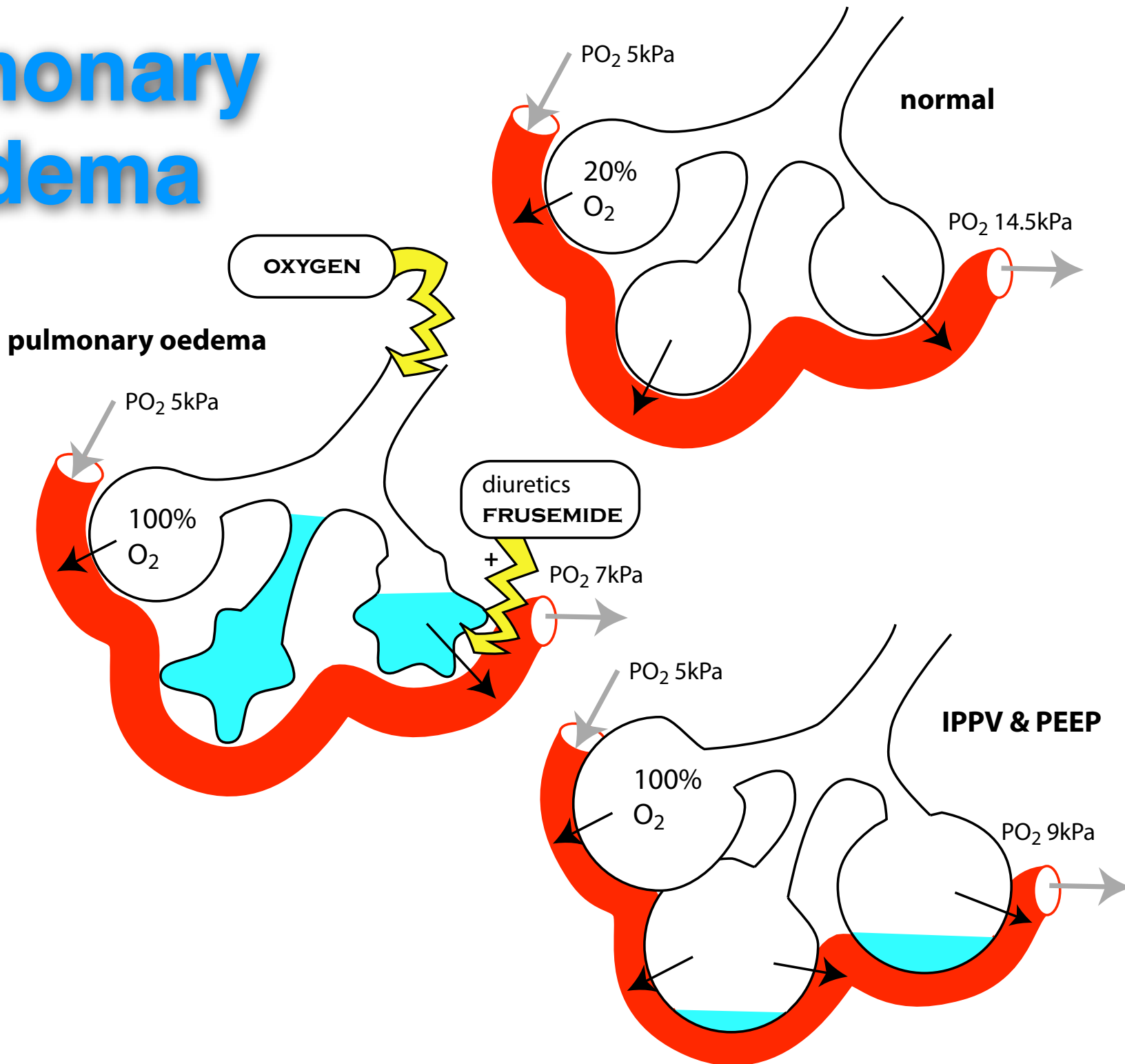
# Respiratory Drugs

# pulmonary oedema

A large, red mushroom with white spots is the central focus of the image. It is surrounded by a dense layer of dry, brown pine needles. The background is a soft, out-of-focus mix of green and brown, suggesting a forest floor.

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

# pulmonary oedema



# pulmonary oedema



- frusemide
- oxygen
  - IPPV?  $\pm$  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

A red mushroom with white spots is shown on a bed of pine needles. The mushroom is the central focus, with its cap and stem visible. The background is a dense layer of dry pine needles, creating a textured, natural setting.

- **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

A large, red mushroom with white spots is growing on a bed of pine needles. The mushroom has a rounded, slightly flattened top and a thick, white stem. The background is a dense layer of dry, brown pine needles.

- 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**

A photograph of a red mushroom with white spots, likely a fly agaric, growing on a bed of pine needles. The mushroom is the central focus, with its bright red cap and white spots contrasting against the dry, brown pine needles. The background is a dense layer of these needles, creating a textured, natural setting.

# **mucolytics**

- **acetylcysteine**
- **bromhexine**

A photograph of a red mushroom with white spots, likely a fly agaric, growing on a bed of pine needles. The mushroom is the central focus, with its bright red cap and gills contrasting against the dry, brown needles. The text is overlaid on the image in a yellow, sans-serif font.

# side effects

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

# antitussives

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



A photograph of a red mushroom with white spots, likely a fly agaric, growing on a bed of pine needles. The mushroom is the central focus, with its bright red cap and white spots contrasting against the brown, needle-covered ground. The text 'antitussives' is overlaid in yellow on the upper part of the mushroom.

# antitussives

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



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# 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

A large, red, spotted mushroom with a thick stem, growing on a bed of dry pine needles. The mushroom has a bright red cap with white spots and a thick, white stem. The background is a dense layer of dry, brown pine needles.

- **$\alpha$ 1 agonists**
  - pseudoephedrine
- **$\beta$ 2 agonists**
  - clenbuterol
  - terbutaline
  - adrenaline

# pseudoephedrine

- vasoconstrictor
- precursor for methamphetamine



# $\beta$ 2 agonists

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

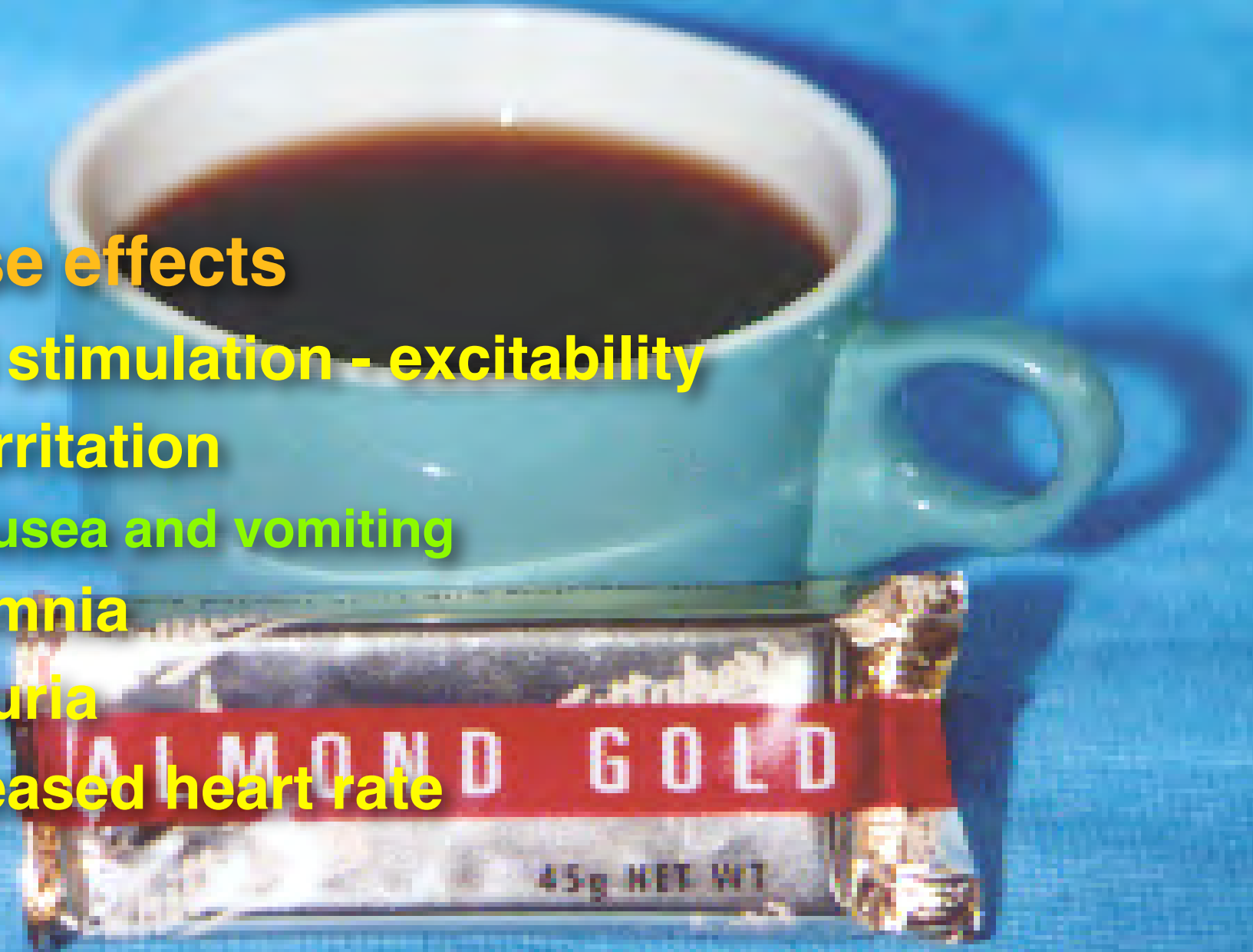
# xanthines

A photograph of a red mushroom with white spots, likely a fly agaric, growing on a bed of pine needles. The mushroom is the central focus, with its bright red cap and white spots contrasting against the dry, brownish pine needles. The background is a dense layer of these needles, creating a textured, natural setting.

- **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 inflammatory 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

A red mushroom with white spots, likely a fly agaric, is the central focus of the image. It is surrounded by a dense layer of dry, brown pine needles. The text is overlaid on the left side of the image.

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

# H1 antagonists

A photograph of a red mushroom with white spots, likely a Amanita muscaria, growing on a bed of pine needles. The mushroom is the central focus of the image, with its bright red cap and white spots contrasting sharply with the dry, brown pine needles. The background is a dense layer of these needles, creating a textured, natural setting.

- **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**
  - **bemegrade**

# 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**