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Pharmacology
Chapter 7 : Drugs Acting on Respiratory System

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Chapter 7

Drugs Acting on Respiratory System

Bronchodilators

- → Bronchodilators are a type of medication that make breathing easier.
- → They do this by relaxing the muscles in the lungs and widening the airways (bronchi).
- → They're often used to treat long-term conditions where the airways may become narrow and inflamed.
- → The drugs dilate (widen) the diameter of bronchi are called Bronchodilators.

Classification

1) **Sympathomimetic Agents (ß2 Blockers)**
    - **Short acting agents :** Salbutamol , Terbutaline.
    - **Long acting agents :** Salmeterol , fenoterol , Formeterol .
2) **Xanthine derivatives :** Thyeophyline , aminophyline.
3) **Anti-Colinergic agents :** Ipratropium Bromide , atropine.

Pharmacological Actions

- They dilate the bronchi.
- They Increase the CNS Performance.
- They have Positive inotropic effect
- They relax smooth muscles
- They increase the acid and pepsin in the stomach etc

Indications

- Acute bronchospasm
- Asthma
- Bronchitis
- Emphysema

Contraindications

- Hypertension
- Coronary arteries disease.
- Uncontrolled arrhythmias.
- Previous history of stroke.
- Peptic Ulcer

Doses

- ✓ Salbutamol 2-4 mg oral , 0.25-.5 mg i.m./s.c. 100-200 mcg inhalation
- ✓ Terbutaline 5 mg oral
- ✓ Thyeophyline 100-300mg TDS oral
- ✓ Aminophylline 250-500 mg / oral

Expectorant

- → An expectorant is a medicine you can use when you have a cough that produces mucus. Expectorants help thin the secretions in your airway and loosen up mucus, so you can make your cough more productive.
- → The drugs are used to treat protuctive cough (with sputum) are called expectorants .

Classification

- ➢ **Directly acting (secretion enhancer / expectorant) :** Sodium citrate , sodium acetate , potassium citrate , potassium acetate , Potassium iodide , Guaiphensine , Tolu balsam , Vasaka, Terpine Hydrate , ammonium chloride ,
- ➢ **Mucolytics :** Bromhexine , ambroxol , Acetyl Cystieine , carbocisteine .

Pharmacological Actions

- Expectorants reduce the viscosity of tenacious secretions by irritating the gastric vagal receptors that stimulate respiratory tract fluid, thus increasing the volume but decreasing the viscosity of respiratory tract secretions.

Indications

- Expectorants also help to relieve chest congestion that occurs because of a cold, the flu, or allergies.
- Potassium iodide has been used to increase the water content of secretions and improve breathing in people with conditions such as asthma, chronic bronchitis, or emphysema.
- Expectorants aim to make coughing up mucus easier, they do not actually stop coughing

Contraindications

- Pregnancy
- Lactation

Dose

- ✓ Guaiphensine 100-200mg TDS
- ✓ Tolu balsam 0.3-0.6 g TDS
- ✓ ammonium chloride 50-200mg TDS

Anti-Tussive Agents

- → Antitussives are medicines that suppress coughing, also known as cough suppressants.
- → The drugs are used to Non- Productive Cough are called anti-tussive drugs
- → A **non-productive cough,** also known as a dry cough, refers to a cough that does not produce sputum.

Classification :

1. **Centrally Acting Anti-Tussives :**
    - **Opioids/Narcotics :** Codeine, Pholcodeine, Ethylmorphine, and Morphine
    - **Non-Opioids/ Non-Narcotics :** Noscapine, Dextromethorphan, Oxeladin, and Chlophedianol
2. **Peripherally Acting Anti-Tussives :**
    - **Antihistamines :** Promethazine. Chlorpheniramine. Diphenhydramine,
    - **Musocalanaesthetics :** Benzonatate and Chlophedianol.
    - **Hydrating Agents :** Steam and Aerosols.
    - **Miscellaneous :** Bromhexine

Pharmacological Action

- They inhibit reflex by suppressing the cough center in CNS (medulla)
- Constipation
- CNS depression
- Sedation
- They have anti- allergic action
- They cause dryness of mouth , blurring of vision , constipation.

Indication

- Common Cold & Cough
- Allergic Diseases
- Mild to Moderate Pain
- Diarrhoea

Contraindication

- Hypertension
- Cardiovascular diseases
- Urination retention

Doses

- ✓ Chlorpheniramine 2-4 mg oral
- ✓ Diphenhydramine 25-50 mg oral
- ✓ Promethazine 25-50 mg oral

Mucolytics Agents

- → The drugs dissolve the thick mucus (sputum) are called Mucolytics .
- → These are agents that reduce viscosity (liquefaction) of respiratory tract secretions without increasing their amount.
- → Mucolytics are drugs used to manage mucus hypersecretion and its sequelae like recurrent infections in patients of COPD, cystic fibrosis, and bronchiectasis.
- → They belong to a group of agents called mucoactive agents.

Classification

- ➢ Bromhexine
- ➢ Ambroxol (It is metabolite of bromhexine and less gastric irritant).
- ➢ Acetylcysteine (It could be given orally or by inhalation).

Pharmacological Action

- ▪ These drugs break the thick , strong sputum and decrease the viscosity of sputum , and sputum comes out easily

Indication

- Difficulty in Coughing
- TB
- Pneumonia
- COPD

Contraindication

- ⅄ Peptic Ulcer
- ⅄ Pregnancy
- ⅄ Bronchospasm

Doses

- ✓ Bromhexine , 8 mg TDS
- ✓ ambroxol , 15-30 mg TDS
- ✓ Acetyl Cystieine , 200-600 mg oral TDS
- ✓ Carbocisteine 250-750 mg TDS