

COUGH: Protective reflex mechanism

Expulsion of respiratory secretion and foreign particles

Occurs due to stimulation of

- **chemoreceptor in throat or respiratory path**
- **Stretch receptor in lungs**



TYPES OF COUGH

**USELESS:
NONPRODUCTIVE
(SHOULD BE REDUCED)**

**USEFUL COUGH:
PRODUCTIVE, SERVES
TO DRAIN AIRWAYS**

ON THE BASIS OF DURATION:

**ACUTE:
LESS THAN 2-3 WEEKS**

**CHRONIC:
MORE THAN 3 WEEKS**

CAUSES OF COUGH

Acute:

- Infection of upper respiratory tract
- cold sinus infection
- whooping cough
- pneumonia

Noninfectious: Bronchitis, emphysema, asthma, Environmental allergens

Chronic :

- Environmental irritants
- Smoking
- Chronic bronchitis
- Dust, pollen
- Industrial chemical
- Pulmonary TB
- Long term use of ACE inhibitor

Antitussive:

- Agent used to relieve or suppress coughing is called Antitussive
- Beneficial in suppressing cough and decreasing morbidity
- In respiratory disease.
- Indicated when coughing is painful, unprotective, distressing exhausting damaging lungs.

Classification of antitussive:

Peripherally acting/locally acting

- Demulscant
- Bronchodilator
- Expectorant
- Mucosal anesthetics

Centrally acting:

- Opioid narcotics
- Non-opioid narcotics

Demulcent:

- Includes: Honey, syrup, glycerin
- They coat, protect, soothe throat directly & promote salivation
- Provide symptomatic relief in case of dry cough

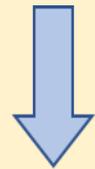
MUCOSAL ANAESTHETICS

BENZONATATE:

- Long chain polyglycol derivatives anaesthetic
- Reduce coughing: Bronchitis, emphysema, influenza, pneumonia
- Half life 3-8 hrs.

Mechanism of action:

Act as local anaesthetic



sensitivity to stretch receptors in lower airways & lungs



Reduce drive to cough

Side effects:

- Drowsiness
- Numbness of mouth & throat
- Dysphagia
- Allergic reaction

Expectorants:

- Expectorants are agents which increase volume or fluidity of secretion in respiratory tract & facilitates their removal by ciliary action.

e,.g. Bromohexine water aerosols

Bromohexine:

Synthetic derivative of alkaloid vasicine

Useful if mucus plug present

Administered by both oral and parenteral routes

Uses: Bronchitis, Bronchopneumonia, Chronic cough

Water aerosols:

Used occasionally to liquify viscous mucus in respiratory tract.

Aerosols delivers few mm water to smaller pulmonary airways & lungs.

Centrally acting:

Opioid antitussive: Codeine, Hydrocodone, Butorphanol, Hydromorphone

Non-opioid antitussive: Dextromethophan , noscapine, phiocaine.

Opioid/Narcotic drugs:

Potent inhibitors of medullary cough centers at sub -analgesic dose

Associated with: sedation, depression of respiratory center.

Codeine:

Opiate alkaloids

Available both as base phosphate & sulphate salts

Action:

Causes direct suppression of cough centre in medulla.

Action can be blocked by naloxone

Onset of action after oral administration- 30 min

Pharmacokinetics:

Conversion to codeine to morphine occur in liver

Binds to M receptor and exerts effect

Side effect:

Anorexia

Vomiting

Constipation

Depression

Codeine:

- **Contraindication:**

Use with CNS depressants may increase CNS /respiratory depressant action.

Anticholinergic drug used with codeine may increase chances of constipation.

Non-opioid Antitussive

- It has been developed to increase safety of centrally acting antitussive drugs.

Dextromethorphan:

- It's a d-isomer of codeine analogue levorphanol.
- Occurs as odorless to white yellow crystalline powder.

Mechanism of action:

Acts as uncompetitive NMDA receptor agonist & serotonin & norepinephrine transporter blocker at different concentration.

Pharmacokinetics:

- Absorbed by GI tract
- Enter blood stream and cross BBB
- Metabolized in liver and metabolite is dextrophan.

Contraindication:

shouldn't be used in allergic reaction

Drug interaction:

Shouldn't be administered with MAOI or serotonin uptake inhibitor due to potential for serotonin syndrome-

(life threatening)

NASAL DECOGESTANTS:

Nasal decongestants may be used in treating nasal congestion associated with sinusitis, middle ear infections and upper respiratory infections.

Decogestants:

Nasal decongestants are agents that constrict the dilated blood vessels in the nasal mucosa by stimulating alpha adrenergic nerve receptor in vascular smooth muscle.

It administered either topically, by inhalation, or orally. Topically used decongestants are effective rapidly.

- Excessive use causes local ischemia and irritation of the nasal mucosa may lead to extensive secondary vasodilation and congestion

