

EXPECTORANTS

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Expectorants are the drugs that help in removing sputum from the respiratory tract either by increasing the fluid of sputum or by increasing the volume of the fluid that have to be expelled from the respiratory track by coughing.

Examples of inorganic expectorants are Ammonium chloride, potassium iodide, sodium iodide and relative substances.

Mechanism of action: They act upon the respiratory tract in two ways:

1. By decreasing the viscosity of the bronchial secretion and facilitating their elimination; local irritants are expelled and ineffectual coughing is alleviated; and
2. By increasing the amount of respiratory tract fluid, a demulcent action is exerted on dry mucosal linings, thus relieving the unproductive cough. It is believed that many of them act by reflux by irritating the gastric mucosa which, in turn, stimulates respiratory tract secretions

Classification of expectorants:

According to their mechanism of action, expectorants are of two types:

1. Sedative expectorants
2. Stimulant expectorants

1. Sedative expectorants: They are stomach irritant expectorants which are able to produce their effect through stimulation of gastric refluxes.

Examples: Ipeaca, Indian squill and compounds such as antimony, potassium tartarate, ammonium chloride, sodium citrate and potassium iodide.

2. Stimulant expectorants: These are the expectorants which bring about stimulation of secretory cell of respiratory track directly or indirectly. Since this drug stimulates direction more fluid get produced in respiratory track and sputum is diluted.

Examples: Lemon, terpine, anithole.

Cough: Cough is a protective reflex helps to expels irritant matter from the respiratory tract.

Mechanism: It is a vital part of defensive mechanism caused by chemical irritants, retained body secretions and presence of foreign bodies that block the airways causing coughing by stimulating the nerve endings of the respiratory tract.

Cough is of two types:

1. Productive cough
2. Non-productive cough

1. **Productive cough:** A productive cough produces sputum (Mixture of saliva and mucus) from lungs often associated with asthma and bronchitis.
2. **Non-Productive cough:** Non-productive cough is also known as dry cough or irritant cough. It does not produce sputum. It may be caused by the cold or inhalation of irritants or gases.

Potassium Iodide: (KI)

Molecular weight: 166 g/mol

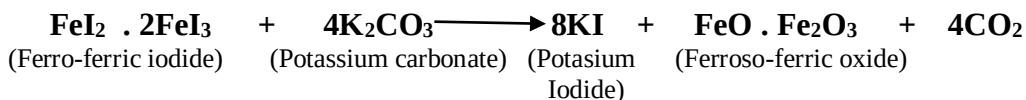
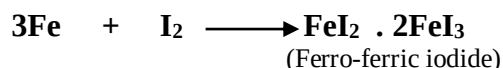
Standards: It should contain not less than 99% of potassium iodide with reference to the dried substance at constant weight at 105°C

Properties:

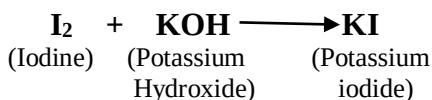
- **Appearance:** White granular powder or opaque crystals.
- **Colour:** Colourless
- **Odour:** Odourless
- **Taste:** Saline bitter taste.
- **Solubility:** Soluble in water (1gm in 0.7mL water), alcohol (1gm in 23mL)

Preparation:

1. Potassium iodide is obtained from the action of iodine on moist iron fillings to form ferro-ferric iodide (FeI_2 or $\text{FeI}_2 \cdot 2\text{FeI}_3$) which then decomposed with potassium carbonate. Ferroso-ferric oxide is filtered out. The filtrate is concentrated to get KI.



2. It is also prepared by heating hot aqueous solution of potassium hydroxide with iodine.



Uses:

- Potassium iodide is used as an expectorant in cough mixtures
- It is used as a saline diuretic.
- It is used in the treatment of thyroid deficiency.
- It is used as an anti-fungal agent in veterinary practice.
- It is used as mild reducing agent.
- It is also used for preparing reagents containing complex iodides.

Storage: Potassium iodide should be stored in a well closed container.