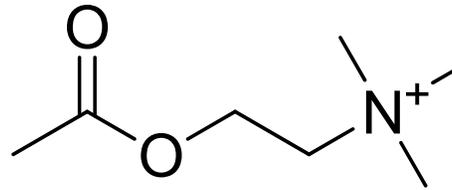


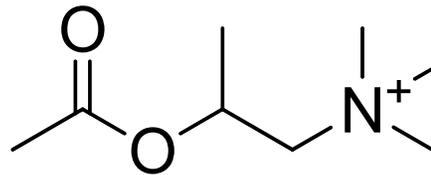
Acetylcholine



- ❖ It is an ester of acetic acid and choline. Acetylcholine is the primary neurotransmitter of the parasympathetic nervous systems.
- ❖ Acetylcholine exerts its effects by binding to and activates nicotinic and muscarinic receptors located on the surface of cells.
- ❖ Acetylcholine binds with nicotinic receptor and activated them to causes opening of the ion channels (K⁺, Na⁺, Ca⁺² channels)
- ❖ In heart ACh hyperpolarizes the SA nodal cells and decreases the rate of diastolic depolarization. As a result, rate of impulse generation is reduced—bradycardia (through M2 receptor)
- ❖ Blood vessels((skin of face, neck, salivary glands)) are dilated, (through M3 receptor)
- ❖ In Eye it causes Contraction of circular muscle of iris → miosis.
- ❖ It constrict Smooth muscle in most organ. Peristalsis in the gastrointestinal tract is increased. Peristalsis in ureter is increased. Bronchial muscles constrict, asthmatics.

- ❖ **Uses**-It is administered in low doses to reverse the action of muscle relaxants, to treat myasthenia gravis. It is used during eye surgery

Methacholine

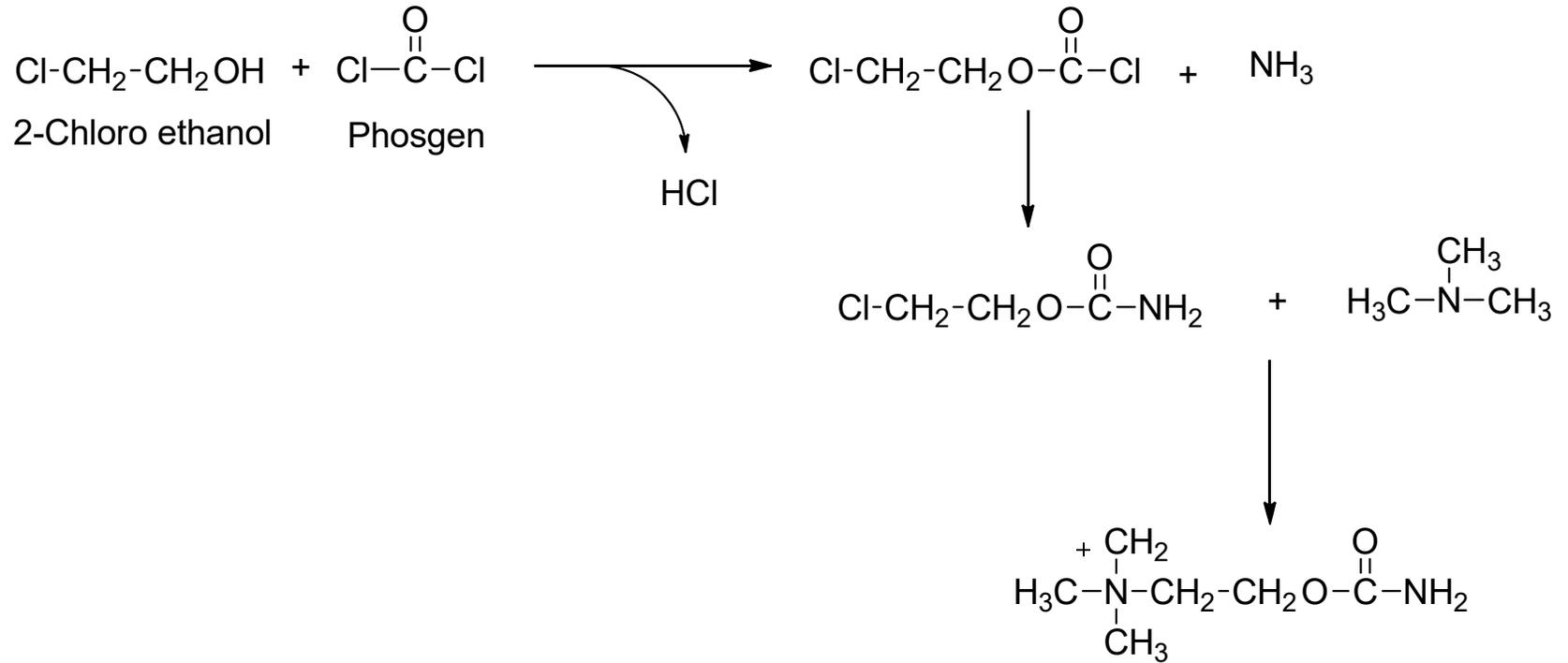
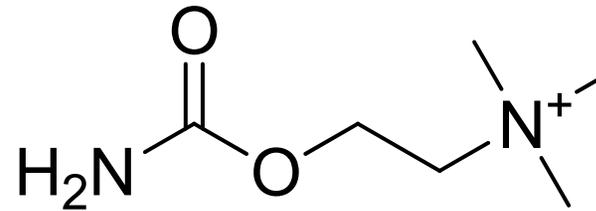


MOA

- ❖ Methacholine is a non-selective muscarinic receptor agonist.
- ❖ It stimulates para-sympathetic nervous system. This drug through its muscarinic activity causes broncho constriction. It has little action on nicotinic receptor.

Uses: It is only used for bronchial diagnosis.

Carbachol

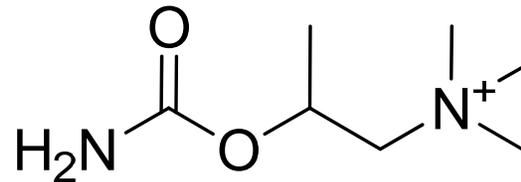


MOA

- ❖ Carbachol is a carbamate derivative. It stimulates both muscarinic and nicotinic receptor to produce its action.
- ❖ It exhibits pharmacological action similar to acetylcholine.
- ❖ It constrict iris and ciliary body of the eye and reduce intra-ocular pressure.

Uses: It is only used for treatment of chronic glaucoma.

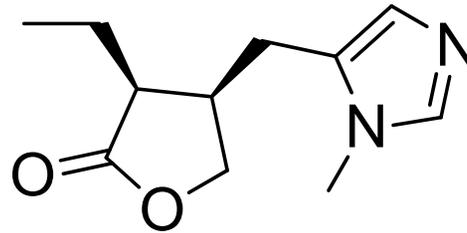
Bethanicol



MOA-Bethanicol is a directly acting cholinergic drug. It has more selective action on muscarinic receptor of gastrointestinal track and urinary bladder.

Uses-For the treatment of acute postoperative and postpartum nonobstructive (functional) urinary retention and for neurogenic atony of the urinary bladder with retention.

Pilocarpine



MOA-Pilocarpine is a cholinergic parasympathomimetic agent. It increase secretion by the exocrine glands. It causes miosis by contraction of the iris sphincter muscle and ciliary muscle (when given topically to the eyes) by mainly stimulating muscarinic receptors.

Uses-For the treatment of radiation-induced dry mouth (xerostomia) and symptoms of dry mouth in patients with Sjögrens syndrome. As eye drops it is used to manage angle closure glaucoma until surgery can be performed.