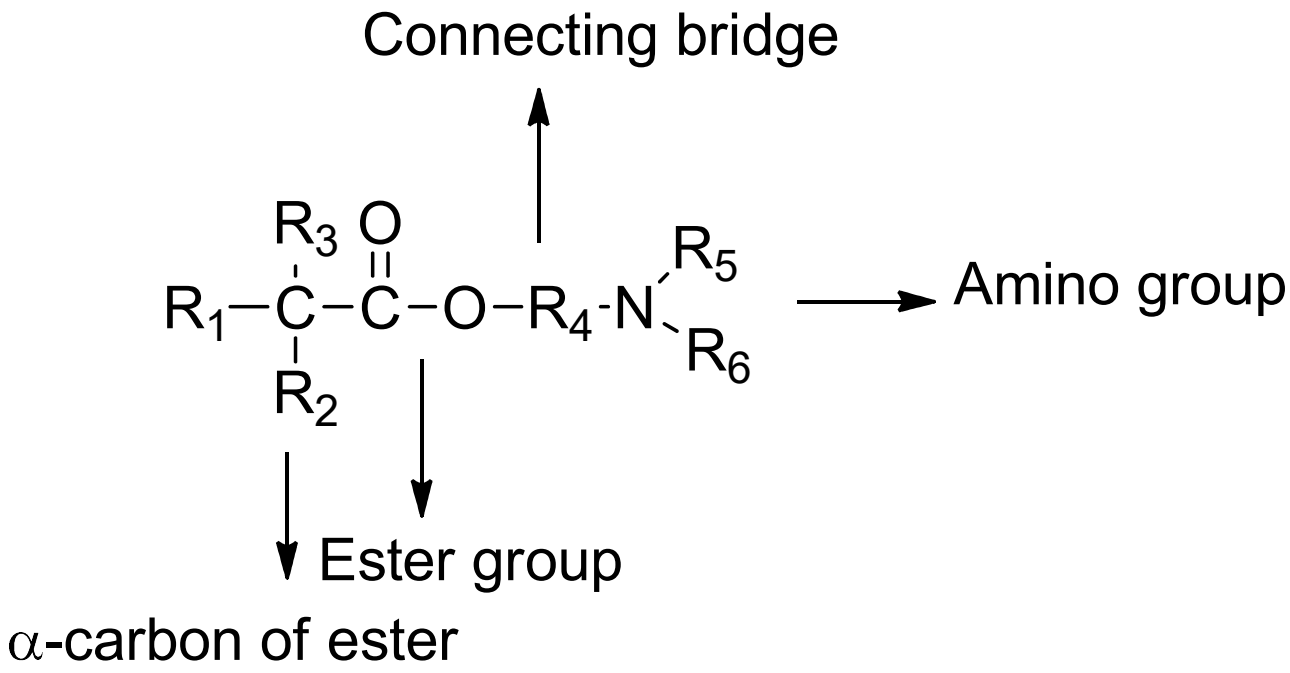
SAR of anticholinergic drugs

The general structure of anti-cholinergic drugs can be represented as below



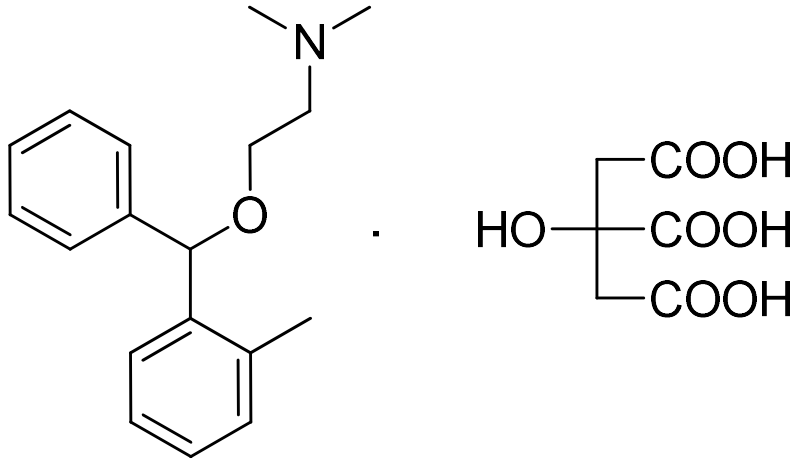
Substitution on the α carbon

R1 may be hydrogen atom or hydroxyl group or hydroxy methyl group or carboxamide group for optimum activity.

R2, R3 should be carbocyclic (phenyl/cyclohexyl/cyclopentyl) or heterocyclic ring for maximum antagonist activity.

Ester group

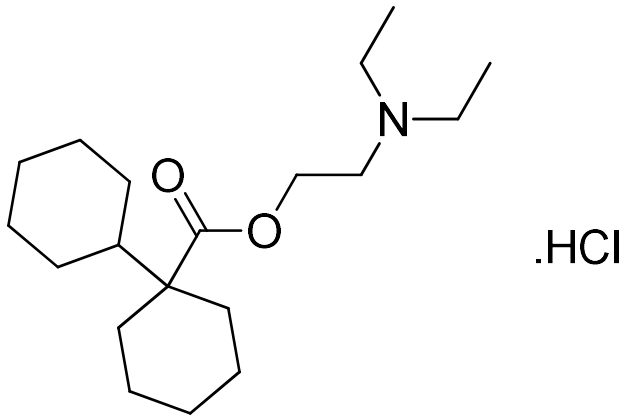
- ❖ Ester group may or may not be present for antagonist activity.
- ❖ Ester group can be replaced by ether function. e.g. orphendrine citrate



- Compound containing ester group posses maximum cholinergic activity.

Connecting bridge

- The optimum chain length of connecting bridge is 2-4 carbon
- Compound containing 2-carbon chain possess maximum anticholinergic activity. e.g. Dicyclomine



Substitution on amino group

- Compound possessing quaternary amino group possess antagonist property.
- Tertiary amines also possess anti-cholinergic activity after its protonation (ionization).
- The amino group can be substituted by either methyl/ethyl/isopropyl group for maximum activity.