

**Kerbala University  
College of Pharmacy  
Dep. of Pharmaceutical Chemistry  
Organic Pharmaceutical Chemistry II**



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# **SYNTHETIC CHOLINERGIC BLOCKING AGENTS**

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*A. Aminoalcohol Esters*

*B. Aminoalcohol Ethers*

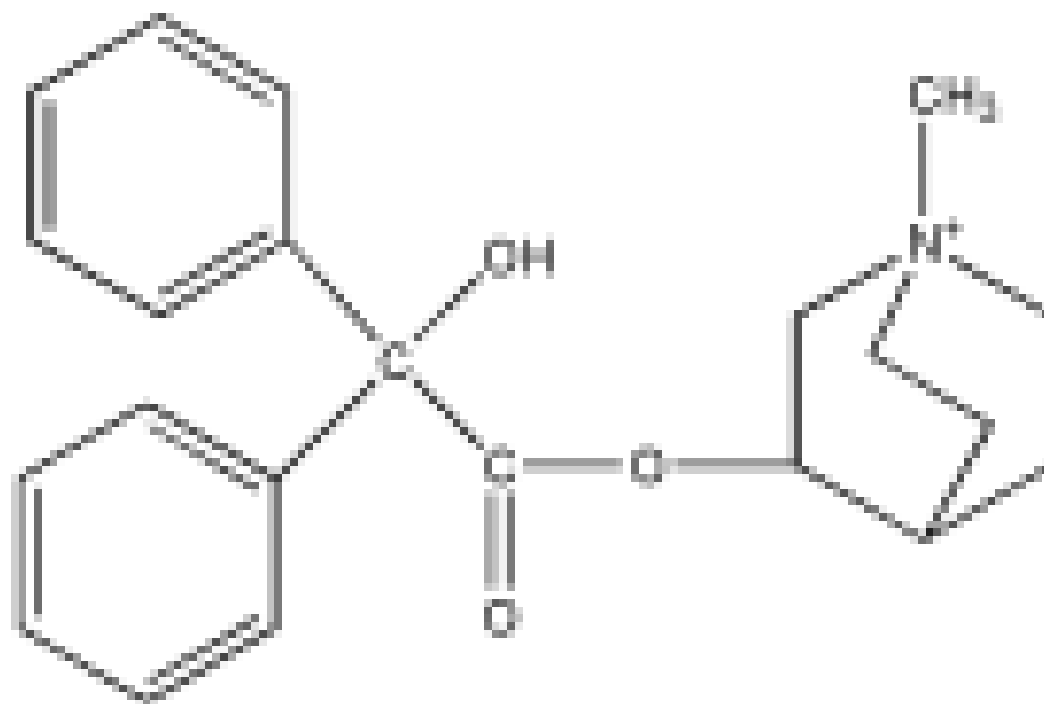
*C. Aminoalcohols*

*D. Aminoamides*

*E. Miscellaneous*

# *Aminoalcohol Esters*

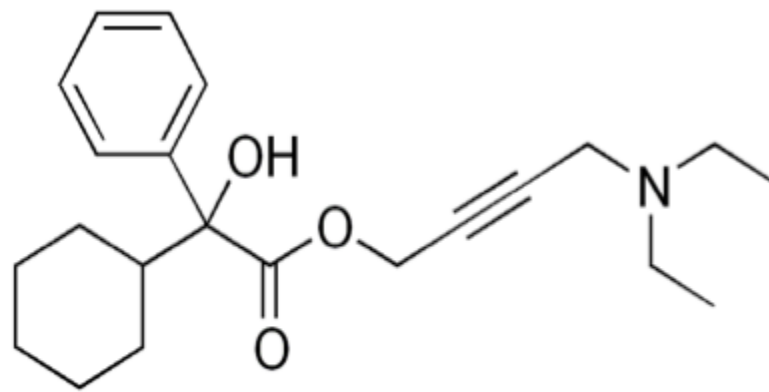
- ***Clidinium Bromide, USP:***
  - Clidinium bromide is combined with the anxiolytic drug chlorodiazepoxide in “Librax”.
  - Clidinium bromide works in IBS by decreasing gastrointestinal motility. Chlordiazepoxide is an anti-anxiety medication.
  - Chlordiazepoxide’s use in IBS is thought to be due to its calming ability for patients that have IBS symptoms that are worsened by anxiety.



Clidinium Bromide

## *Oxybutynin:*

- Acts on bladder smooth muscles.
- This reduction in smooth muscle tone allows for greater volumes of urine to be stored in the bladder, which results in less urinary incontinence, urgency, and frequency.
- Oxybutynin acts as a competitive antagonist on M1, M2, and M3 receptor subtypes.

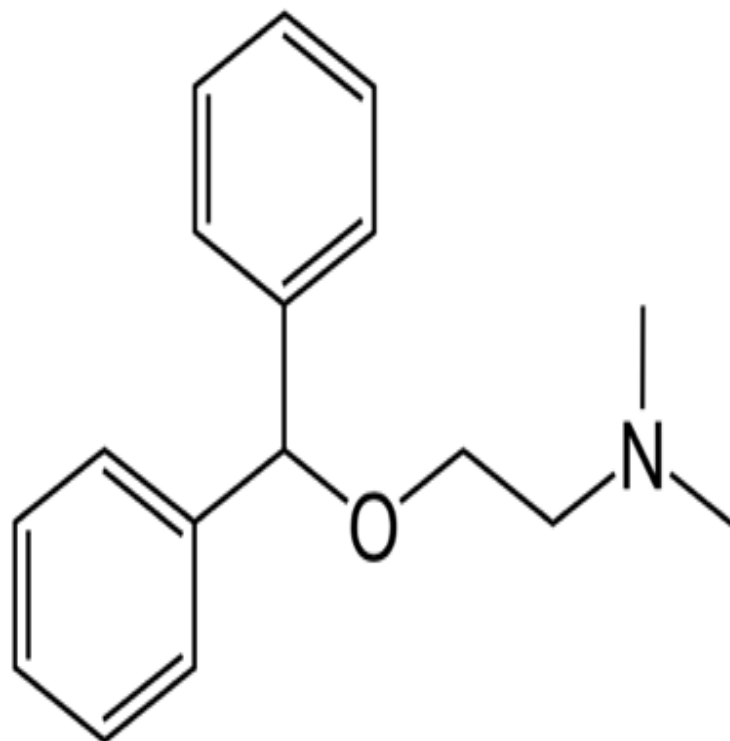


**Oxybutynin**

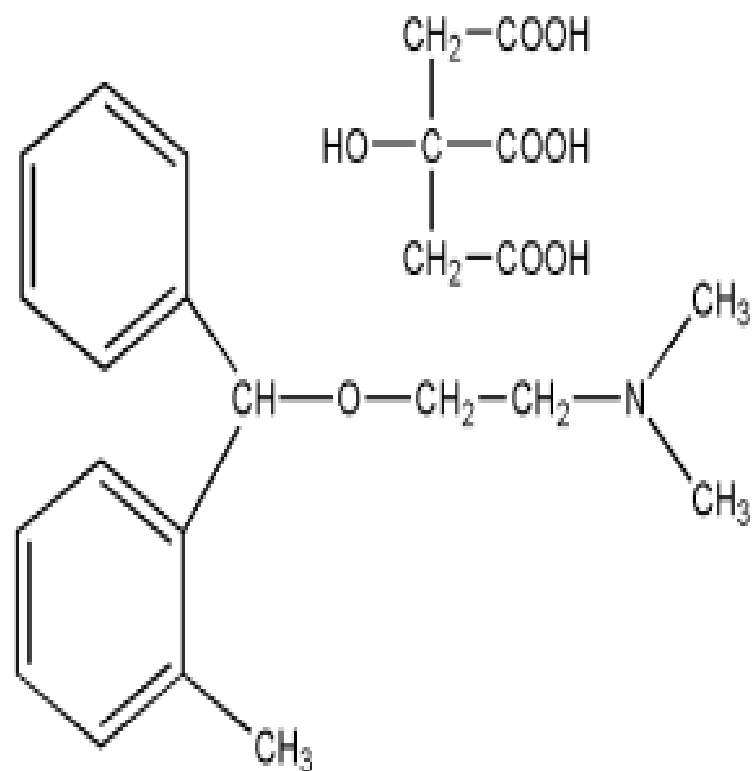
# *Aminoalcohol Ethers*

- ***Orphenadrine Citrate:***
- It does reduce voluntary muscle spasm, however, by a central inhibitory action on cerebral motor areas, a central effect similar to that of atropine.
- is closely related to diphenhydramine structurally but has much lower antihistaminic activity and much higher anticholinergic action.





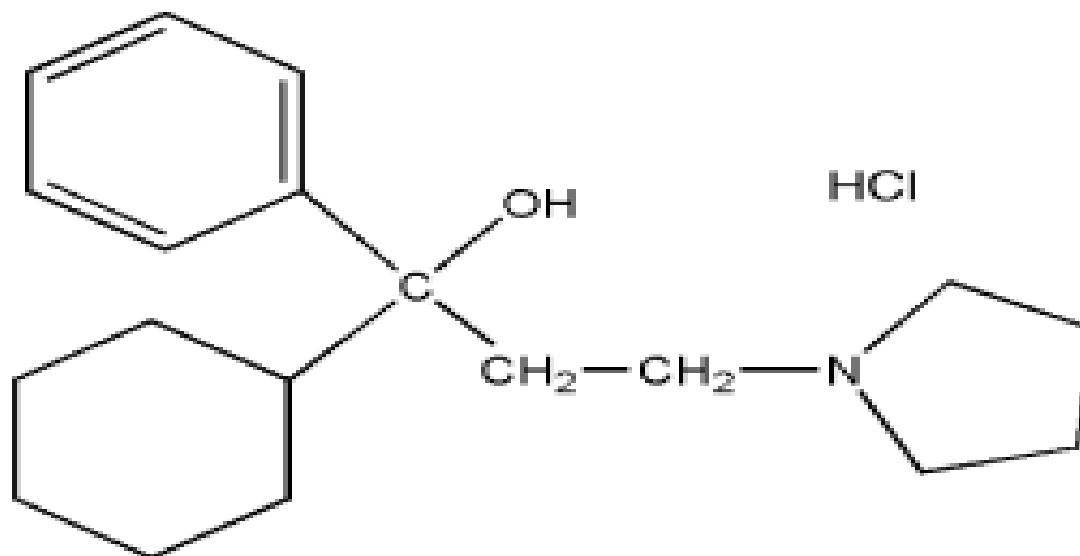
Diphenhydramine



Orphenadrine Citrate

# *Aminoalcohols*

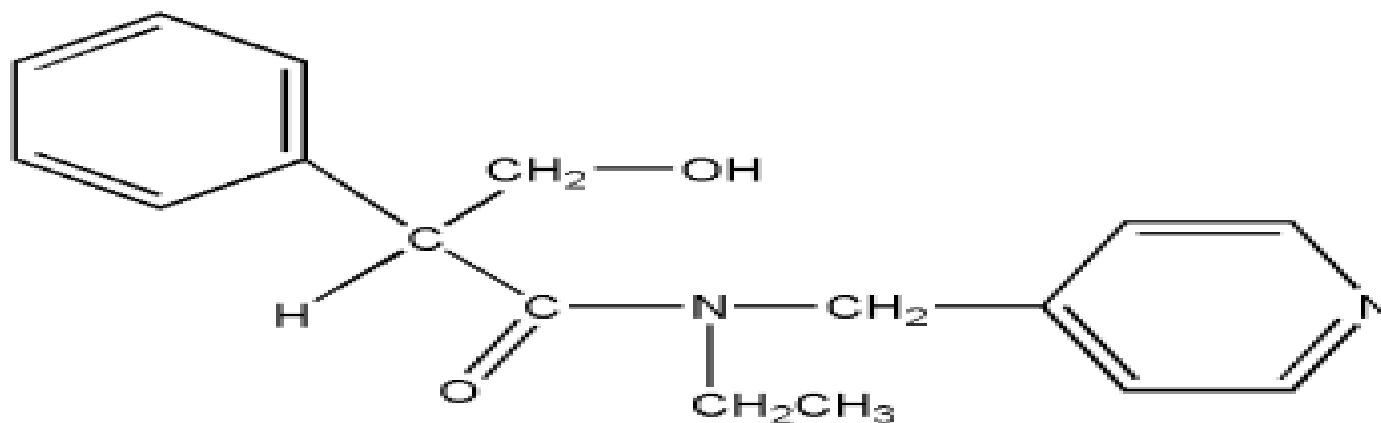
- ***Procyclidine Hydrochloride, USP:*** (Kemadrin)
- Used in the treatment of Parkinson syndrome.



Procyclidine Hydrochloride

# *Aminoamides*

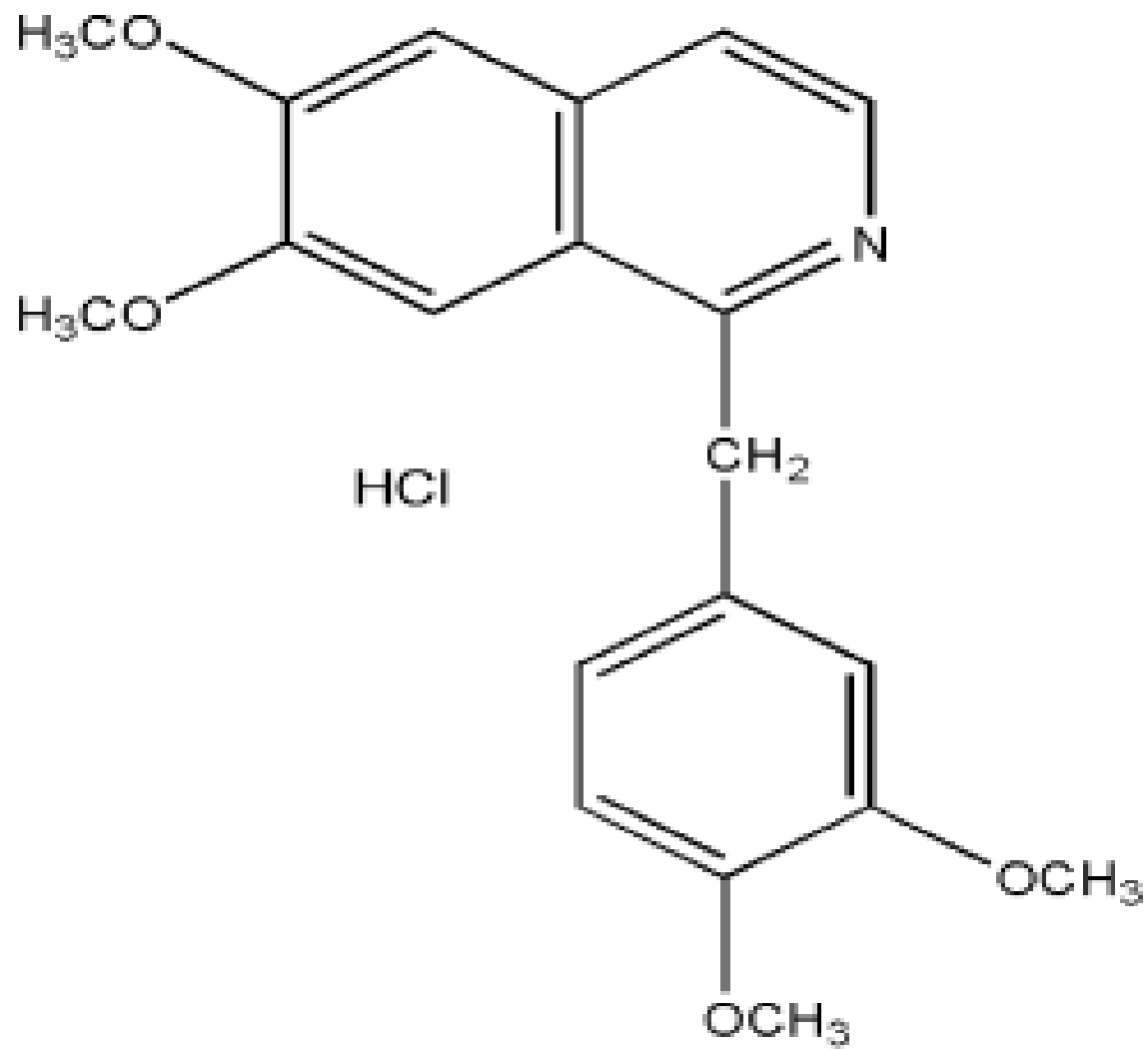
- ***Tropicamide, USP:*** (Mydriacyl)
- Effective anticholinergic for ophthalmic use.



Tropicamide

# *Miscellaneous*

- ***Papaverine Hydrochloride, USP:***
- Has a main effect on smooth muscle as a spasmolytic.
- Because of its broad antispasmodic action on ACh muscarinic receptors, it is often called a nonspecific antagonist.



Papaverine Hydrochloride

# References:

- **Reference text:** Wilson and Gisvold Textbook of Organic Medicinal and Pharmaceutical Chemistry; Delgado JN, Remers WA, (Eds.); 12th ed., 2011.