

PHB



Dr. Arvind Kumar Gupta
(M.Pharm, PDCR, PGDMM & Ph.D)
GATE 2003 Qualified with 97.2 percentile
Dr. S. N. Dev College of Pharmacy
Shamli (U.P.)

OFFICE: BUILDING No. 3/314, OFFICE-1, GAUSHALA ROAD, SHAMLI DISTRICT SHAMLI (U.P.) – 247776

Mobile: +91-9719638415

Email: arindrkgit@gmail.com

Course Name : D. Pharm
Year : Second Year
Subject Name : Pharmacology
Topic Name : Miotics

Miotics are a class of drugs used to constrict the pupil of the eye (miosis) by stimulating the muscarinic receptors in the iris sphincter muscle. They are primarily used in the treatment of conditions such as glaucoma and intraocular hypertension.

Classification:

Miotics can be classified based on their chemical structure and mechanism of action. Common subclasses include:

1. Directly acting or agonists:

e.g. Acetylcholine, Bethanechol, Pilocarpine.

2. Indirectly acting or cholinesterase inhibitors:

a. Reversible:

e.g. Physostigmine, Neostigmine, Edrophonium.

b. Irreversible:

e.g. Ecothiophate iodide, Demecarium, Diisopropylfluro phosphate.

3. Dual action (having both muscarinic and weak cholinesterase action):

e.g. Carbachol.

4. Reactivation of acetylcholinesterase: e.g. Pralidoxime.

Mechanism of Action:

1. Direct-acting miotics directly stimulate muscarinic receptors in the iris sphincter muscle, leading to contraction and pupil constriction.
2. Indirect-acting miotics inhibit the enzyme acetylcholinesterase, which degrades acetylcholine, thereby increasing the concentration of acetylcholine at the muscarinic receptors and promoting pupil constriction.

Dose:

- The dosage of miotics varies depending on the specific medication, formulation, and the severity of the condition being treated.
- Dosages are typically adjusted based on the patient's response to treatment and any adverse effects experienced.

Uses:

- **Management of glaucoma:** Miotics help reduce intraocular pressure by constricting the pupil and increasing aqueous humor outflow through the trabecular meshwork.
- **Intraocular surgery:** Miotics are sometimes used during intraocular surgery to induce miosis and facilitate surgical maneuvers, such as intraocular lens placement.
- **Diagnosis of Horner syndrome:** Miotics can be used diagnostically to identify Horner syndrome by assessing pupillary responses.

Contraindications:

- Hypersensitivity or allergy to the drug or its components.
- **Acute iritis or uveitis:** Miotics may exacerbate inflammation in the eye and worsen symptoms in these conditions.
- **Angle-closure glaucoma:** Miotics can precipitate acute angle-closure attacks by causing pupillary constriction and exacerbating the blockage of aqueous humor outflow.
- Patients with certain cardiovascular conditions or pulmonary diseases may require caution when using miotics due to the potential for systemic absorption and adverse effects.