

Drug Name	ADME & Kinetics	Pharmacodynamics (Action)	Clinical Uses	Contraindications (CI) & Side Effects
Bethanechol	<p>A: Poor oral absorption.</p> <p>M: Completely resistant to AChE.</p> <p>Duration: Long-acting.</p>	<p>Selective Muscarinic. Increase s GI motility & contracts detrusor muscle (bladder).</p>	<ol style="list-style-type: none"> 1. Post-operative urinary retention. 2. Paralytic ileus. 	<p>CI: Asthma, Peptic Ulcer, Hyperthyroidism, Mechanical obstruction.</p>
Methacholine	<p>M: Slowly hydrolyzed by AChE; resistant to Pseudo-AChE.</p> <p>Selectivity: Highly Muscarinic.</p>	<p>CVS: Potent cardiac inhibition.</p> <p>Respiratory: Potent bronchoconstrictor.</p>	<p>Diagnosis of Bell's Asthma (Challenge Test) to detect hyperreactivity.</p>	<p>CI: Active Asthma, Severe COPD, recent MI.</p>
Carbachol	<p>M: Not hydrolyzed by AChE.</p> <p>Potency: Very high.</p> <p>Type: Non-selective (M & N).</p>	<p>Stimulates both M & N receptors. Produces intense Miosis & reduces IOP.</p>	<ol style="list-style-type: none"> 1. Glaucoma (Topical). 2. Intraocular miosis during surgery. 	<p>CI: Heart disease, Asthma, Ulcer. SE: Severe hypotension.</p>
Pilocarpine	<p>Nature: Tertiary amine (BBB+).</p> <p>A: Good corneal/oral absorption.</p>	<p>Direct Muscarinic. Potent stimulator of glands (Sweat, Saliva). Causes Miosis.</p>	<ol style="list-style-type: none"> 1. Glaucoma (DOC). 2. Xerostomia (Dry mouth). 3. Sialagogue. 	<p>SE: Excessive sweating, salivation, blurred vision, bradycardia.</p>
Physostigmine	<p>Nature: Tertiary amine (Crosses BBB).</p>	<p>Reversible Anti-AChE. Increases ACh levels in CNS and Periphery.</p>	<ol style="list-style-type: none"> 1. Atropine Poisoning (Antidote). 	<p>SE: CNS toxicity (Convulsions), bradycardia, increased secretions.</p>

			2. Glaucoma.	
Neostigmine	Nature: Quaternary (No BBB). Dynamics: Direct Nm action.	Reversible Anti-AChE. Strongest effect on skeletal muscles.	1. Myasthenia Gravis. 2. Reversing NM blockers. 3. Cobra bite.	CI: Mechanical obstruction. SE: Cholinergic crisis.
Edrophonium	Duration: Very short (5-15 min). E: Rapid renal elimination.	Reversible Anti-AChE. Rapidly increases muscle strength.	Diagnosis of Myasthenia Gravis (Tensilon Test).	SE: Muscle twitching, excessive salivation.
Organophosphates	A: Highly lipid soluble; absorbed via skin & BBB.	Irreversible Anti-AChE. Forms covalent bond (Aging).	Insecticides, Nerve Gases. Ecothiopate for Glaucoma.	Poisoning: DUMBBELS. Antidote: Atropine + Pralidoxime (Oximes).
Atropine	A: Good oral absorption. D: Crosses BBB. t1/2: 4 hours.	Competitive M-blocker. Causes Tachycardia, Mydriasis, Cycloplegia, Dryness.	1. Pre-anesthetic. 2. Bradycardia. 3. OP poisoning. 4. Colics.	CI: Glaucoma , Prostatic Hypertrophy. SE: Dry mouth, Flush, Fever, Blurred vision.
Hyoscine	Nature: Tertiary amine. CNS: Depressant effect.	M-blocker. Causes Sedation, Amnesia, and Anti-emetic effects.	1. Motion Sickness. 2. Pre-operative sedation.	SE: Drowsiness, extreme dry mouth.
Ipratropium	Nature: Quaternary.	M-blocker. Bronchodilat	1. Bronchial Asthma.	SE: Minimal systemic effects, dry mouth.

		ion without drying of mucus.	2. COPD.	
Propranolol	Route: Inhalation. A: High 1st pass metabolism. D: Lipid soluble (BBB+).	Non-selective β-blocker. \downarrow CO, \downarrow HR, \downarrow Renin, inhibits β_2 .	Hypertension, Migraine, Anxiety, Thyrotoxicosis, Arrhythmia.	CI: ASTHMA , Diabetes, Raynaud's, Heart Block.
Atenolol	A: Polar (No BBB). E: Renal (unchanged).	Selective β_1-blocker. Cardio-selective; no effect on bronchi.	Hypertension/Angina in Asthmatics or Diabetics.	CI: Severe Bradycardia, unstable heart failure.
Prazosin	Selectivity: α_1 blocker. Action: Vasodilation.	Blocks α_1 in BV and Prostate. Dilates arteries/veins.	1. Hypertension. 2. BPH (Prostate hypertrophy).	SE: First Dose Phenomenon (Syncope and Hypotension).
Trimethaphan	Duration: Very short. Route: IV Infusion.	Ganglion Blocker (Nn). Blocks both S & PS systems.	Controlled hypotension in surgery, Hypertensive emergency.	SE: Severe orthostatic hypotension, urinary retention.