

Autonomic Nervous System Pharmacology Study Guide

Sympathomimetics (Adrenergic Agonists)

Non-Selective Agonists

- **Epinephrine**
 - **Mechanism of Action:** Binds to α and β adrenergic receptors.
 - **Uses:** Anaphylaxis, cardiac arrest, asthma.
 - **Side Effects:** Hypertension, arrhythmias, anxiety.

α -Selective Agonists

- **Phenylephrine**
 - **Mechanism of Action:** Selective α_1 receptor agonist.
 - **Uses:** Nasal decongestion, hypotension.
 - **Side Effects:** Hypertension, reflex bradycardia.

β -Selective Agonists

- **Albuterol**
 - **Mechanism of Action:** Selective β_2 receptor agonist.
 - **Uses:** Asthma, bronchospasm.
 - **Side Effects:** Tremor, tachycardia.

Mixed α and β Agonists

- **Isoproterenol**
 - **Mechanism of Action:** Non-selective β agonist.
 - **Uses:** Bradycardia, heart block.
 - **Side Effects:** Tachycardia, arrhythmias.

Sympatholytics (Adrenergic Antagonists)

α -Blockers

- **Prazosin**
 - **Mechanism of Action:** Selective α_1 receptor antagonist.
 - **Uses:** Hypertension, benign prostatic hyperplasia.
 - **Side Effects:** Orthostatic hypotension, dizziness.

Non-Selective β -Blockers

- **Propranolol**
 - **Mechanism of Action:** Non-selective β receptor antagonist.
 - **Uses:** Hypertension, angina, migraine prophylaxis.
 - **Side Effects:** Bradycardia, bronchoconstriction.

Cardioselective β_1 -Blockers

- **Metoprolol**
 - **Mechanism of Action:** Selective β_1 receptor antagonist.
 - **Uses:** Hypertension, angina, heart failure.
 - **Side Effects:** Fatigue, bradycardia.

α and β Blockers

- **Carvedilol**
 - **Mechanism of Action:** Non-selective α and β receptor antagonist.
 - **Uses:** Heart failure, hypertension.
 - **Side Effects:** Hypotension, dizziness.

Parasympathomimetics (Cholinergic Agonists)

Direct-Acting Agonists

- **Bethanechol**
 - **Mechanism of Action:** Stimulates muscarinic receptors.
 - **Uses:** Postoperative urinary retention.
 - **Side Effects:** Bradycardia, hypotension.

Indirect-Acting Agonists (Acetylcholinesterase Inhibitors)

- **Donepezil**
 - **Mechanism of Action:** Increases acetylcholine levels in the brain.
 - **Uses:** Alzheimer's disease.
 - **Side Effects:** Nausea, diarrhea.

Parasympatholytics (Anticholinergic Agents)

Muscarinic Receptor Antagonists

- **Atropine**
 - **Mechanism of Action:** Blocks muscarinic receptors.
 - **Uses:** Bradycardia, organophosphate poisoning.
 - **Side Effects:** Dry mouth, blurred vision, constipation.

Antimuscarinic for COPD

- **Ipratropium**
 - **Mechanism of Action:** Blocks muscarinic receptors.
 - **Uses:** COPD, asthma.
 - **Side Effects:** Dry mouth, blurred vision.

Antimuscarinic for Overactive Bladder

- **Oxybutynin**
 - **Mechanism of Action:** Blocks muscarinic receptors.
 - **Uses:** Overactive bladder.
 - **Side Effects:** Dry mouth, constipation.

Adrenergic Neuron Blockers

- **Guanethidine**
 - **Mechanism of Action:** Prevents norepinephrine release.
 - **Uses:** Hypertension.
 - **Side Effects:** Orthostatic hypotension, diarrhea.