

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: Neuromuscular Blocking Agents

Neuromuscular blocking agents (NMBAs) are a class of drugs used in anesthesia and critical care to induce skeletal muscle relaxation. They act at the neuromuscular junction to block the transmission of nerve impulses, resulting in paralysis of skeletal muscles. This paralysis facilitates endotracheal intubation, mechanical ventilation, surgical procedures, and reduces patient movement during surgery. There are two main types of NMBAs:

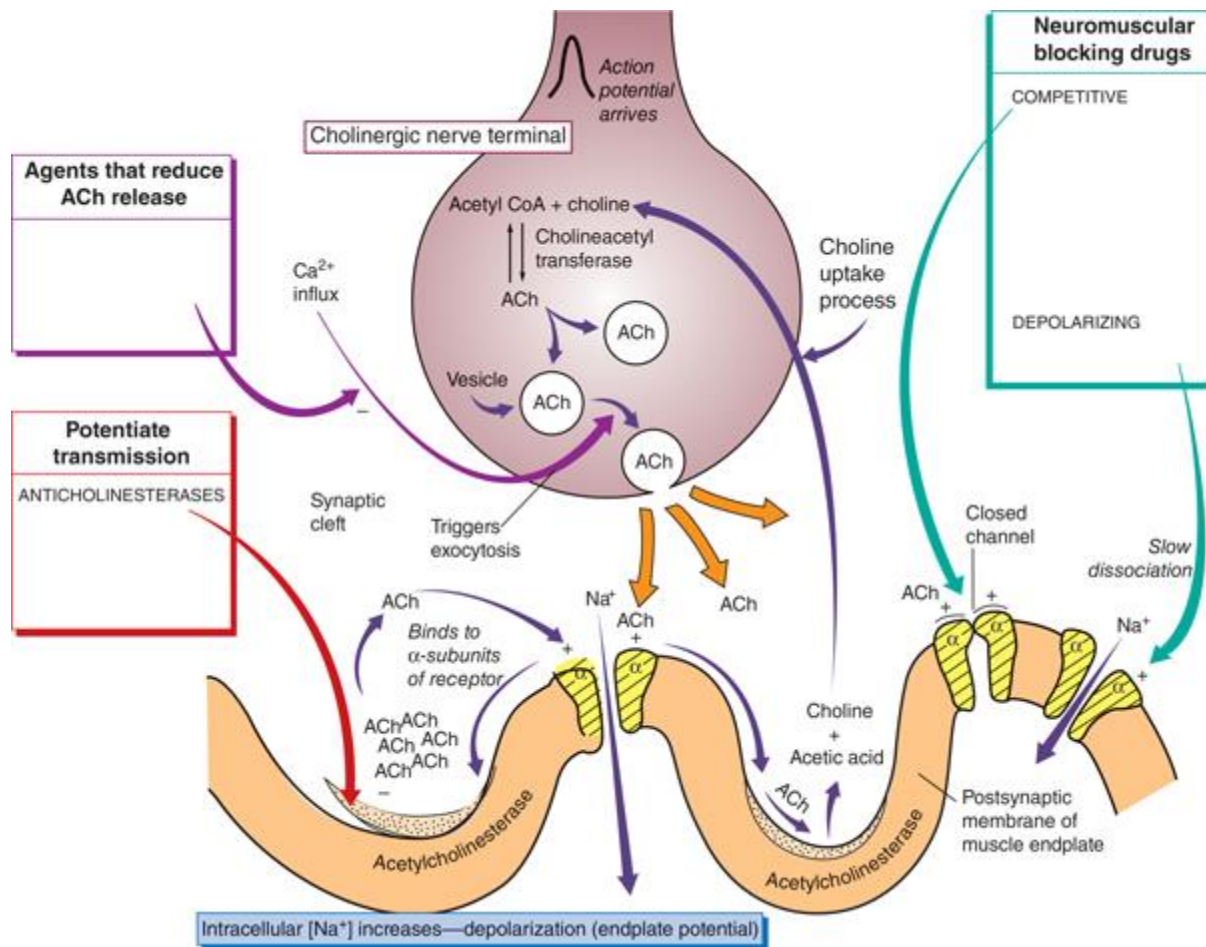
1. Depolarizing Neuromuscular Blockers: e.g. Succinylcholine (Suxamethonium)

- **Mechanism of Action:** Succinylcholine acts as a depolarizing agent, initially causing muscle depolarization by mimicking acetylcholine. However, it persists at the neuromuscular junction, preventing repolarization and muscle contraction.
- **Duration of Action:** Short duration of action (approximately 5-10 minutes).
- **Indications:** Rapid sequence induction for endotracheal intubation, short surgical procedures.
- **Contraindications:** Hyperkalemia, history of malignant hyperthermia, severe skeletal muscle myopathy.

2. Non-Depolarizing Neuromuscular Blockers:

e.g.

- Rocuronium,
- Vecuronium,
- Atracurium,
- Cisatracurium,
- Pancuronium



- **Mechanism of Action:** Non-depolarizing agents competitively block the nicotinic acetylcholine receptors at the neuromuscular junction, preventing acetylcholine from binding and initiating muscle contraction.
- **Duration of Action:** Varies among different agents, ranging from short to intermediate to long duration of action.
- **Indications:** Endotracheal intubation, maintenance of muscle relaxation during surgery, mechanical ventilation in the intensive care unit.
- **Contraindications:** Hypersensitivity to the drug, known or suspected neuromuscular disorders (e.g., myasthenia gravis), renal or hepatic impairment (some agents).