

# Pharmacology of Skeletal Muscle Relaxants and CNS Stimulants

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# Introduction

- Skeletal muscle relaxants are used to reduce muscle spasms and spasticity
- CNS stimulants enhance brain activity, increasing alertness and energy.
- Understanding their pharmacology is crucial for safe and effective use in clinical practice.

هسا احنا بدنا نمنع ال muscle spasms  
عن طريق اني اعمل الها paralysis

# Classification of Skeletal Muscle Relaxants

- **Centrally Acting Muscle Relaxants:** They affect the CNS and target special receptors, they used in MS treating
  - Baclofen (GABA-B agonist) To paralysed the muscle (prevent the contraction)
  - Tizanidine (Alpha-2 adrenergic agonist) Inhibit releasing of glutamate
  - Diazepam (Benzodiazepine, GABA-A agonist) Increase the influx of chloride
  - Cyclobenzaprine (TCA-like, used for acute muscle spasms) ما حكت عنه شيء الدكتورة
- **Peripherally Acting Muscle Relaxants:** They work on the neuromuscular junction so we call them neuromuscular blockers
  - Dantrolene (Inhibits ryanodine receptors, used in malignant hyperthermia)
  - Botulinum Toxin (Prevents acetylcholine release)

يعرف الطالب أنه أي شيء آخره curium أو curonium هو muscle relaxant



The neuromuscular blockers divided into :

2 molecules of ACh.

Here the succinylcholine will bind to the nicotinic receptors and result in Na<sup>+</sup> influx and k<sup>+</sup> efflux

• **Depolarizing Agents: Succinylcholine**

-phase 1: fasciculations. Phase 2: muscle paralysis

-malignant hyperthermia: ryanodine receptor, hyperkalemia

• **Nondepolarizing Agents: Curare Like, Aminosteroids**

-Curare Like: **“curium”** Cisatracurium  
duration, cleared in plasma, no histamine release

safe): long

Mivacurium: short duration, lower dose if renal/hepatic impaired,  
histamine release

Atracurium: same as Cisatracurium

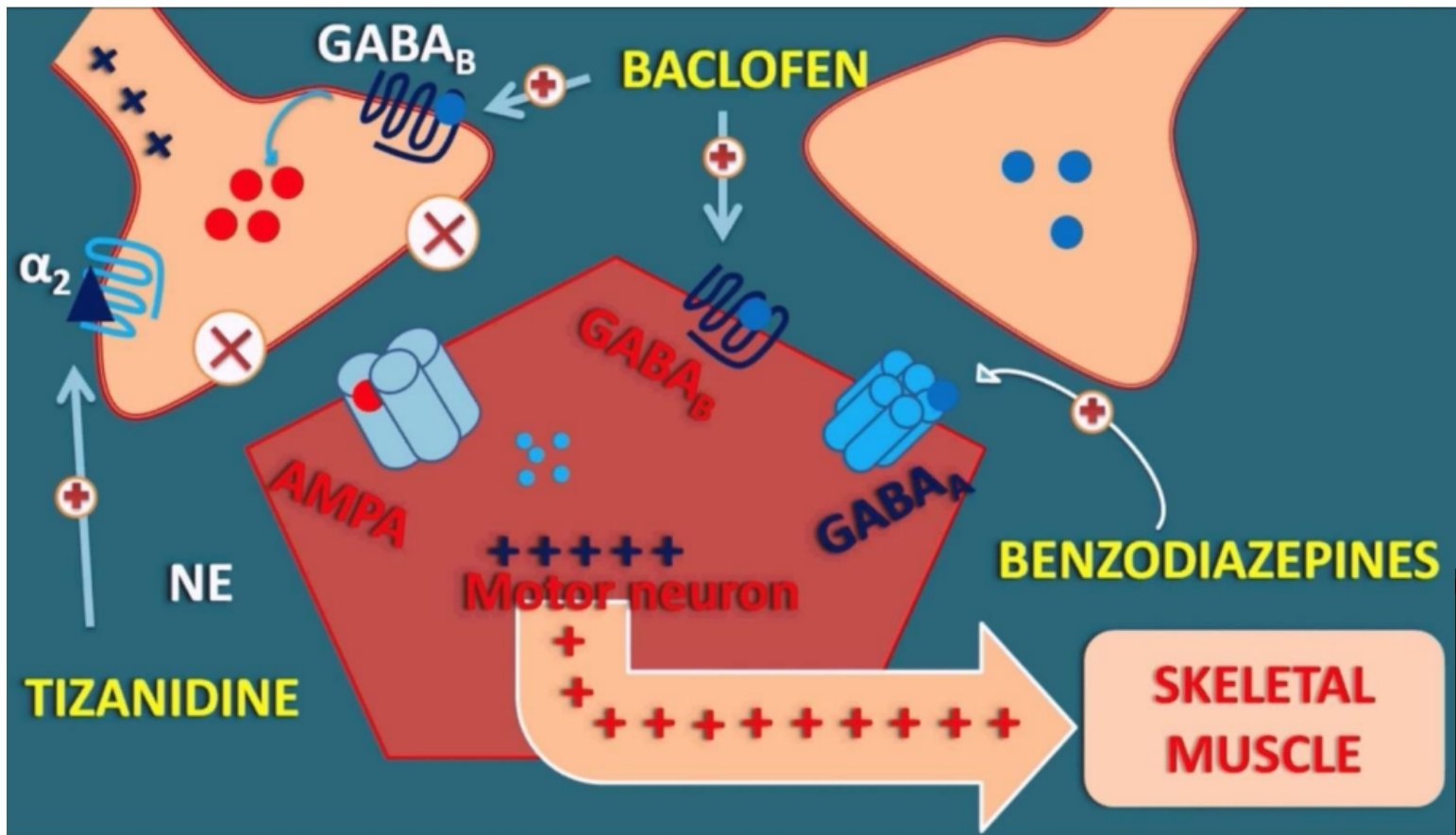
-Aminosteroids: **“curonium.”** Pancuronium: muscarinic blockade/vagolytic, renal clear

**Rocuronium: rapid onset**

**Vecuronium**

They are an ACh antagonist, they block the ACh release and transmission by preventing the ACh from binding to the nicotinic receptors, without affecting the Na<sup>+</sup> channels opening (from here they take their name)

هون الفكرة انه رح يسبب depolarisation بال phase الأولى فبعمل الحالة المذكورة، وخلي ببالك انه ال cholinesterase ما بقدر يكسره لانه مش Ach, المهم بعدين العضلة من كثرة الرجات رح تدخل بال phase الثانية



فقط مطلوب mechanism of action

بمعنى

GABA B agonist

Alpha 2 agonist ... etc

**THANK YOU**

لا تنسونا من دعواتكم