MUSCLE RELAXANTS

Dr Walid Zuabi
FCA RCSI

MUSCLE RELAXANTS

-Neuromuscular blocking agents.

-It DOES NOT ensure amnesia, analgesia or loss of consciousness.

-Neuromuscular transmission:

The region between the motor neuron and the muscle cell.

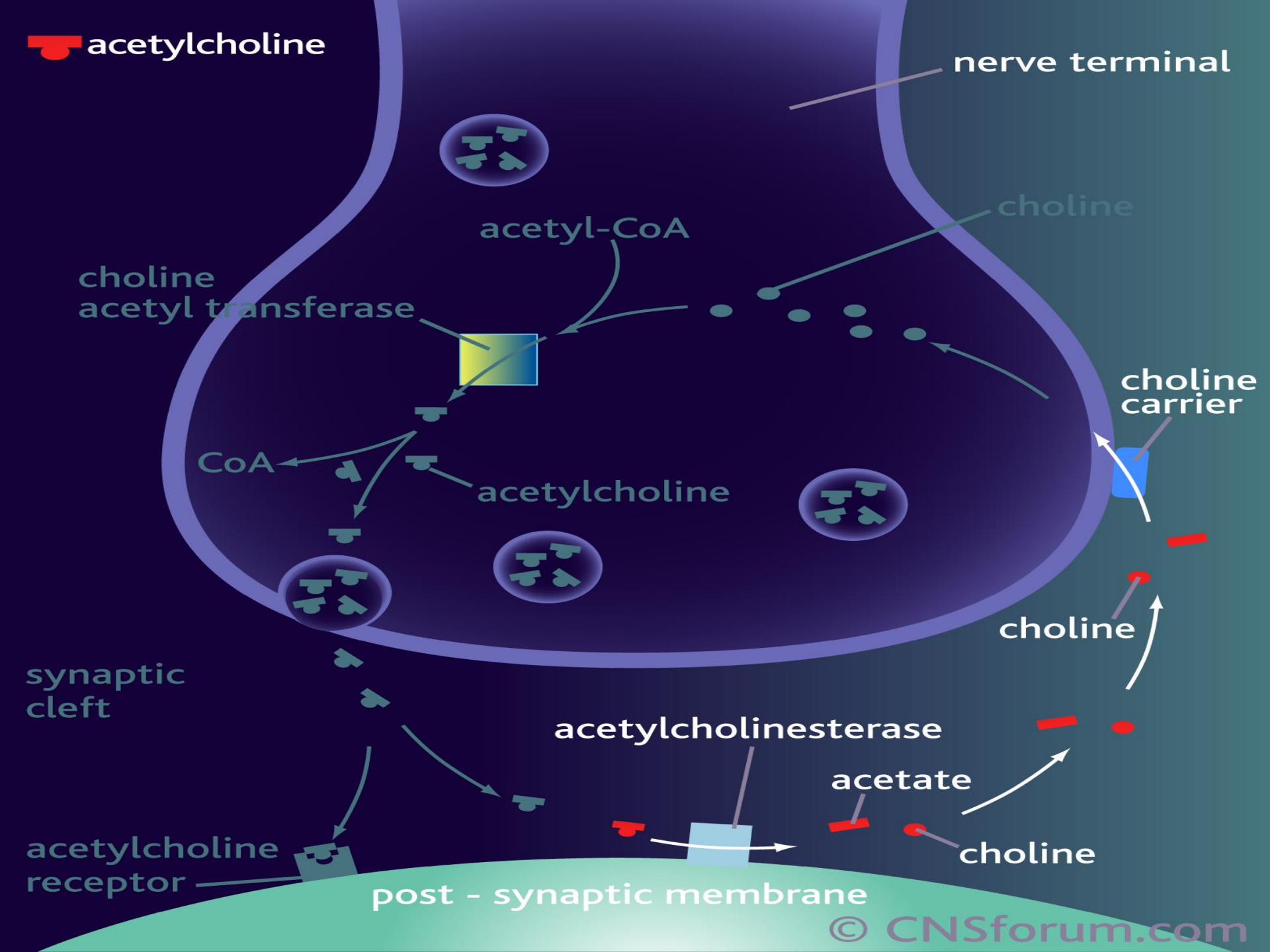
-Synaptic cleft: a narrow gap separates the cell membranes of the neuron and the muscle fiber.

-ACH.

-Nicotinic Cholinergic receptors.

-Action potential, ACH release ,channel opening [Na in and Ca release]…muscle contraction.

-ACH esteraze.. ACH hydrolysis, channels close..repolarization..relaxation.


acetylcholine
nerve terminal
choline
acetyl-CoA
choline
acetyl transferase
choline
carrier
CoA
acetylcholine
choline
synaptic
cleft
acetylcholinesterase
acetate
acetylcholine
receptor
choline
post - synaptic membrane
© CNSforum.com

Mechanism of action

DMR: 2 ACH molecules,genereate action potential that cause prolonged depolarization and muscle relaxation.

NDMR:it is a competitive ACH antagonist.. binds to the ACH receptors and prevent its action on the post- junctional plate…no action potential.

INDICATIONS

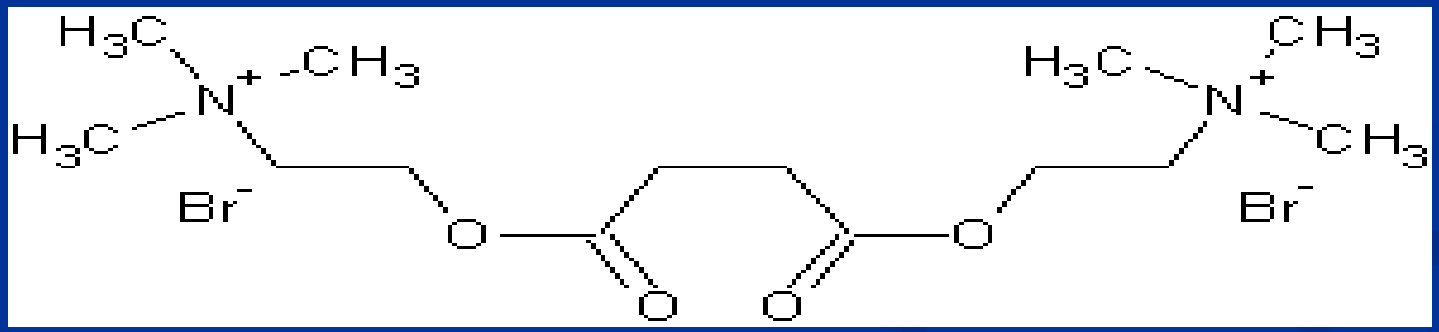
- Anaesthetic: when intubation indicated: full Stomach.

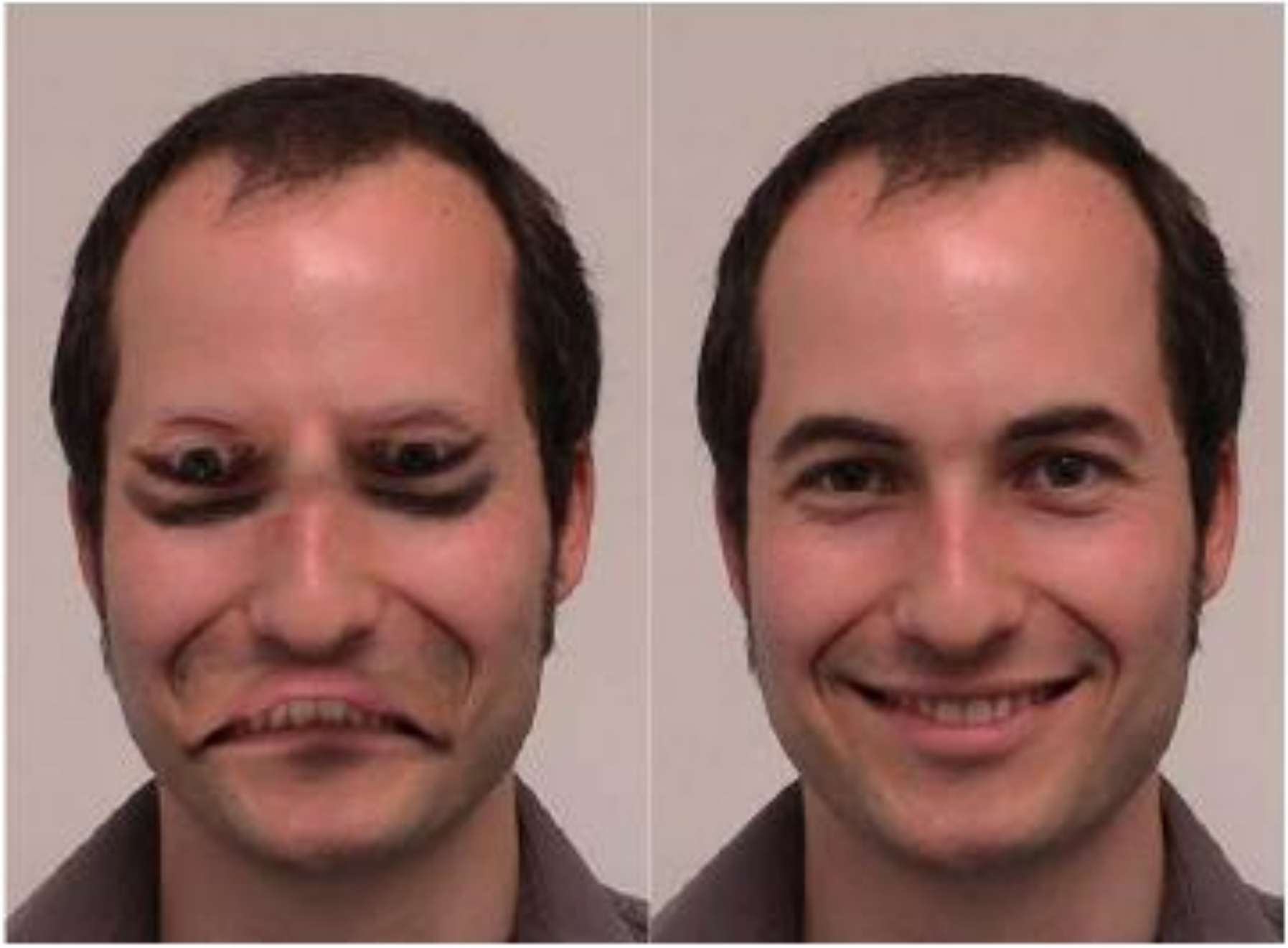
- Surgical: Long operations

  Microscopic operations

- N.B :DON'T GIVE THE MR BEFORE ENSURING ADEQUTE VENTILATION.


Suxamethonium
mg/ml


H3C
CH3
N+
H3C
Br-
O
O
O
O
H3C
CH3
N+
CH3
Br-



DMR

- Succinylcholine

  2 joined ACH molecules
- Rapid onset, short duration: use for RSI in emergencies.

Rapid metabolism by pseudocholinesterase: *low level in liver disease,pregnancy,renal failure.*

Dose

- IV:1-1.5 mg/kg for dults
- 1-2 mg/kg in children due to higher ECF.
- IM: 5mg/kg.
- SIDE EFFECTS:

  Bradycardia Risk of **cardiac arrest, rhabdomyolysis hyperkalaemia** in patients with myopathies.
- Bradycardia Occurs due to stimulation of **muscarinic** receptors in the SA node…more common in children and after repeated doses of the drug. .

- Fasciculations: disorganized visible motor unit contractions.
- Post-op.myalgia.
- Hyperkalaemia
- Increased intrgastric pressure.
- Increase of IOP
- Triggering of malignant hyperthermia
- Scoline apnea

NDMR

-Steroids: pancuronium,vecuronium,rocuronium.

-Benzyl isoquinolines : Atracurium, cisatracurium,mivacurium.

histamine release, extrahepatic metabolism.

-The glottic muscles is the most resistant one to block.

-Patients with liver cirrhosis or renal failure need adjustment of the drug type and dose.

ATRACURIUM:

-Metabolism by nonspecific esterases and hoffman elimination.

-Dose: iv 0.5 mg/kg.

-Duration: 30 minutes, more in hypothermic patients.

-Storage :2-8 c.

-Side effects: hypotension ,tachycardia, bronchospasm, laudanosine toxicity.

CISATRACURIUM

Stereoisomer of atracurium

Hoffman elimination

no histamine release.

-Dose : 0.15 mg/kg , intubation within 2 minutes, duration ½ hour.

MIVACURIUM

-Metabolized by pseudocholinesterase.

-Its action is prolonged in patients with liver failure,renal failure,pregnacy.

-Dose: 0.15-0.2 mg/kg.

-Onset: 2-3 minutes, duration: 20 minutes.

-Side effects: histamine release.

-Good choice when intubation is needed for short procedures.

PANCURONIUM

-Steroid ring with 2 ACH molecules.

-Hepatic metabolism.

-Renal and bile excretion.

-It is not the best in renal failure and cirrhosis.

-Dose: 0.1 mg/kg, duration: 45 min.

-S.E: Hypertension and tachycardia due to vagolytic effect,
catecholamine release…arrhythmias.
Allergic reactions.

VECURONIUM

-Steroid monoquaternary relaxant.

-Excretion mainly biliary then renal.

-prolonged action in RF.

-Dose: 0.1 mg/kg acts for 30-40 min.

-Store at room temp as powder.

+ve: stable CVS.

duration of action is not significantly prolonged in pts with cirrhosis.

ROCURONIUM
Esmeron

-Monoquaternary steroid analogue of vecuronium.

-Rapid onset of action, use for modified RSI.

-Liver and renal elimination.

-Prolonged action in hepatic failure and pregnancy.

-No active metabolite ..so can be used for infusions.

-Dose:0.6-1mg/kg. iv
2mg/kg IM for children.

-Duration of action depends on the dose.

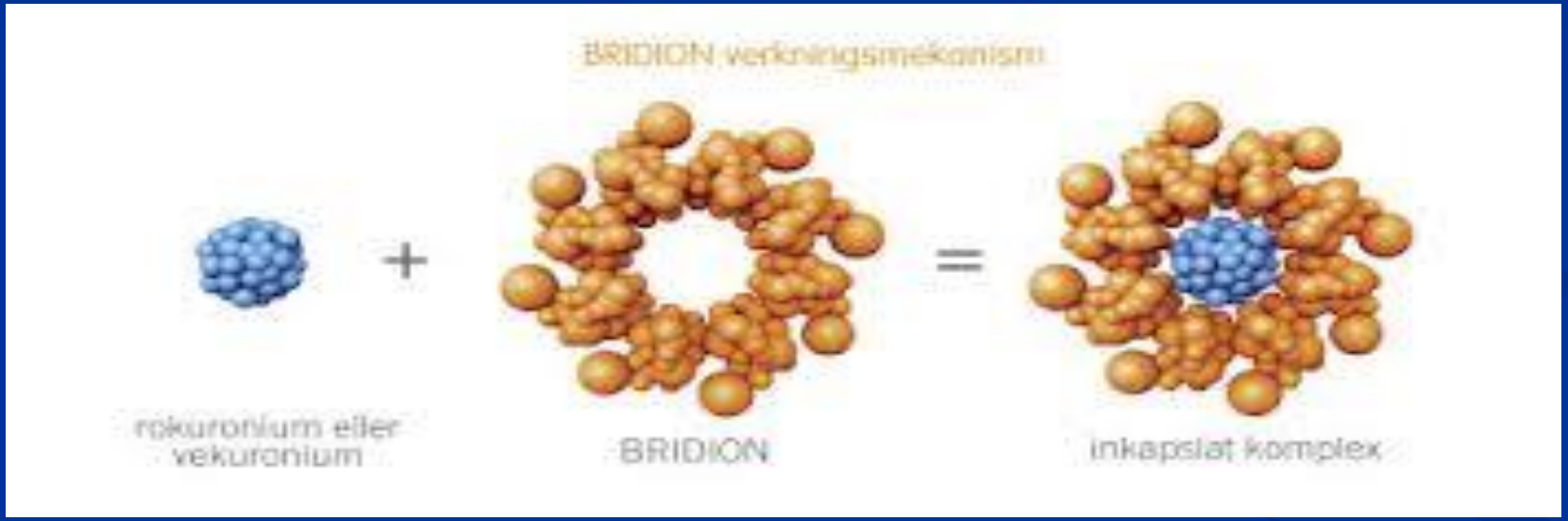
-Painful on injection, precipitation.


bridion®
sugammadex

•Modified γ-cyclodextrin, with a lipophilic core and a hydrophilic periphery

bridion®

sugammadex



As you lecture, you keep watching the faces, and information keeps coming back to you all the time.

As you lecture, you keep watching the faces, and information keeps coming back to you all the time.