

Effect of Drugs on Rabbit Intestine

By

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Pharmacology &

Toxicology

Background

- Intestine are Involuntary structure with myogenic contraction (spontaneous rhythmic contraction) which undergo control of nervous system.
- Intestine is composed of duodenum, jejunum & ileum
- Two types of nervous control; **Autonomic** and **Enteric**.
- Autonomic nervous control include **Parasympathetic** and **sympathetic**.
- Parasympathetic – intestinal control through cholinergic {**Muscarinic (M_3)** and **nicotinic (Neuronal type)**} receptors.
- Parasympathetic control will (↑) intestinal smooth muscle motility (**Stimulant or spasmodic effect**)
- Sympathetic – intestinal control through Adrenergic { **α_1 and β_2** } receptors.
- Sympathetic control will (↓) intestinal smooth muscle motility (**Relaxant or spasmolytic effect**)
- Enteric – intestinal control mainly through **Histaminergic, Serotonergic** and **Purinergic** receptors.
- Enteric control (↑) intestinal smooth muscle motility (**Stimulant or spasmodic effect**).

Materials and Methods

Animal

Rabbit (1.5-2.5 kg)

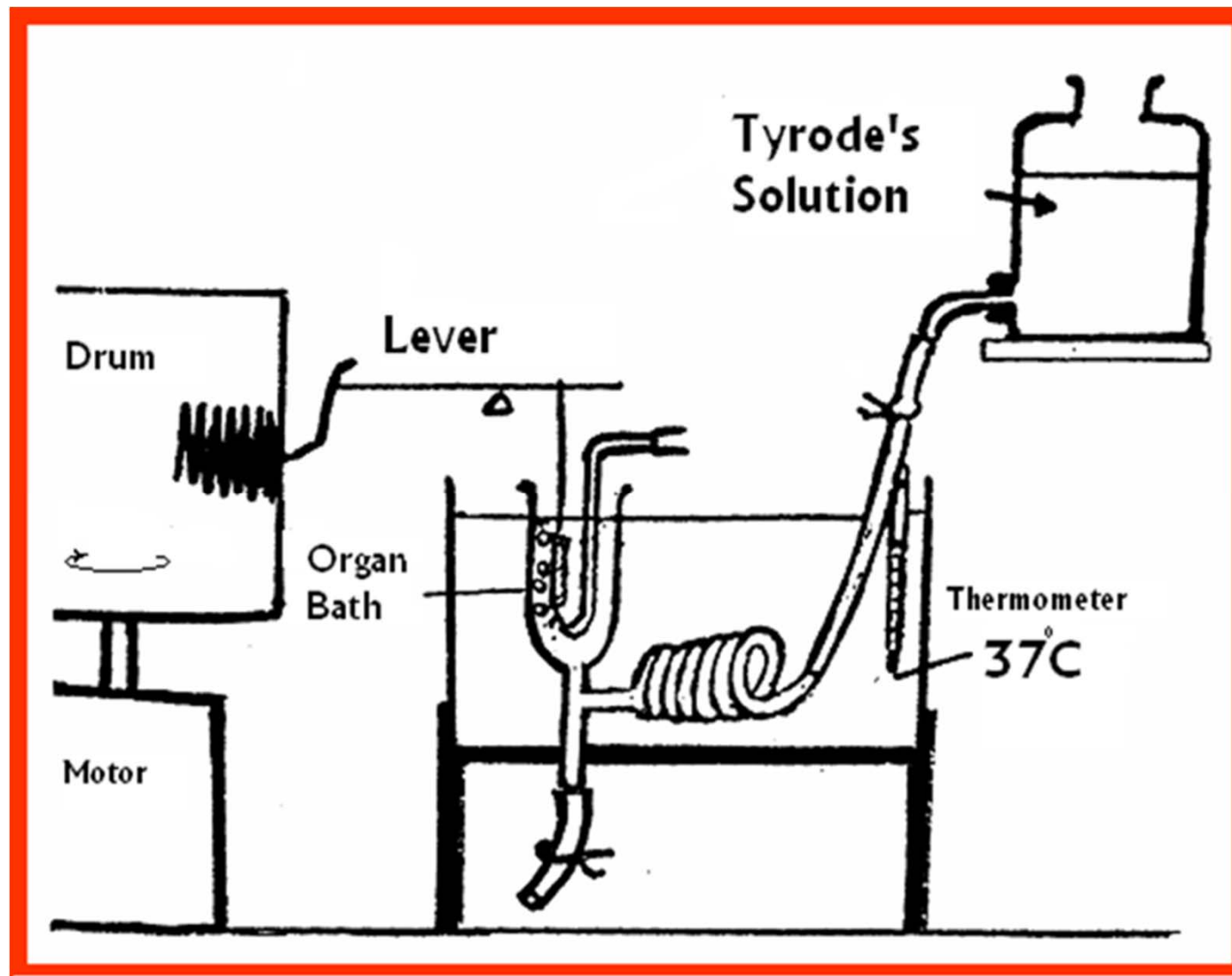
Drugs

- Nicotine .
- Acetylcholine .
- Adrenaline .
- Atropine .
- Histamine .
- Barium Chloride .
- Magnesium Chloride .
- Calcium chloride.

Instruments

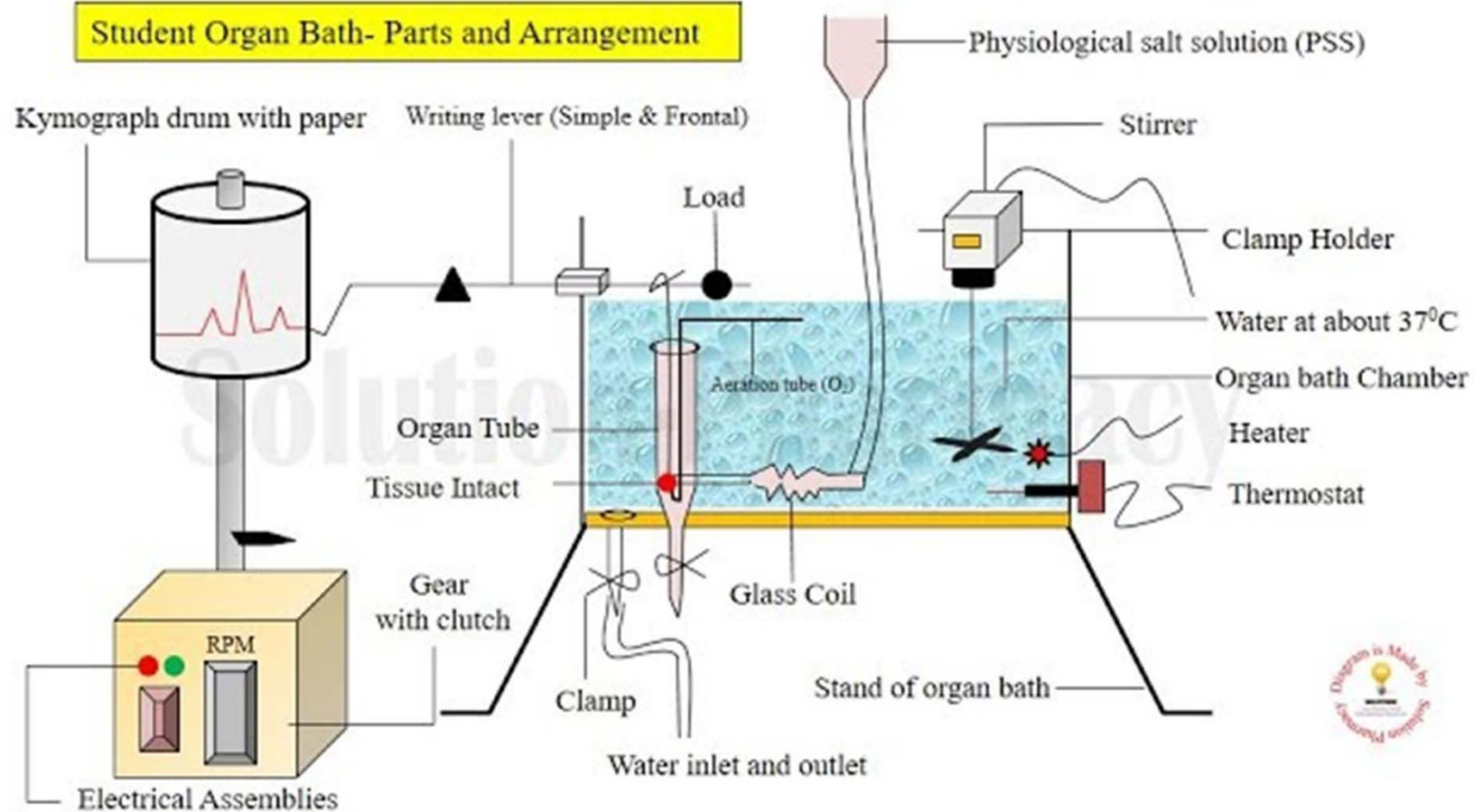
- Kymograph apparatus set which composed from:

{ Kymograph apparatus, Organ bath and Ringer or Tyrodes solution (for jejunum)}.



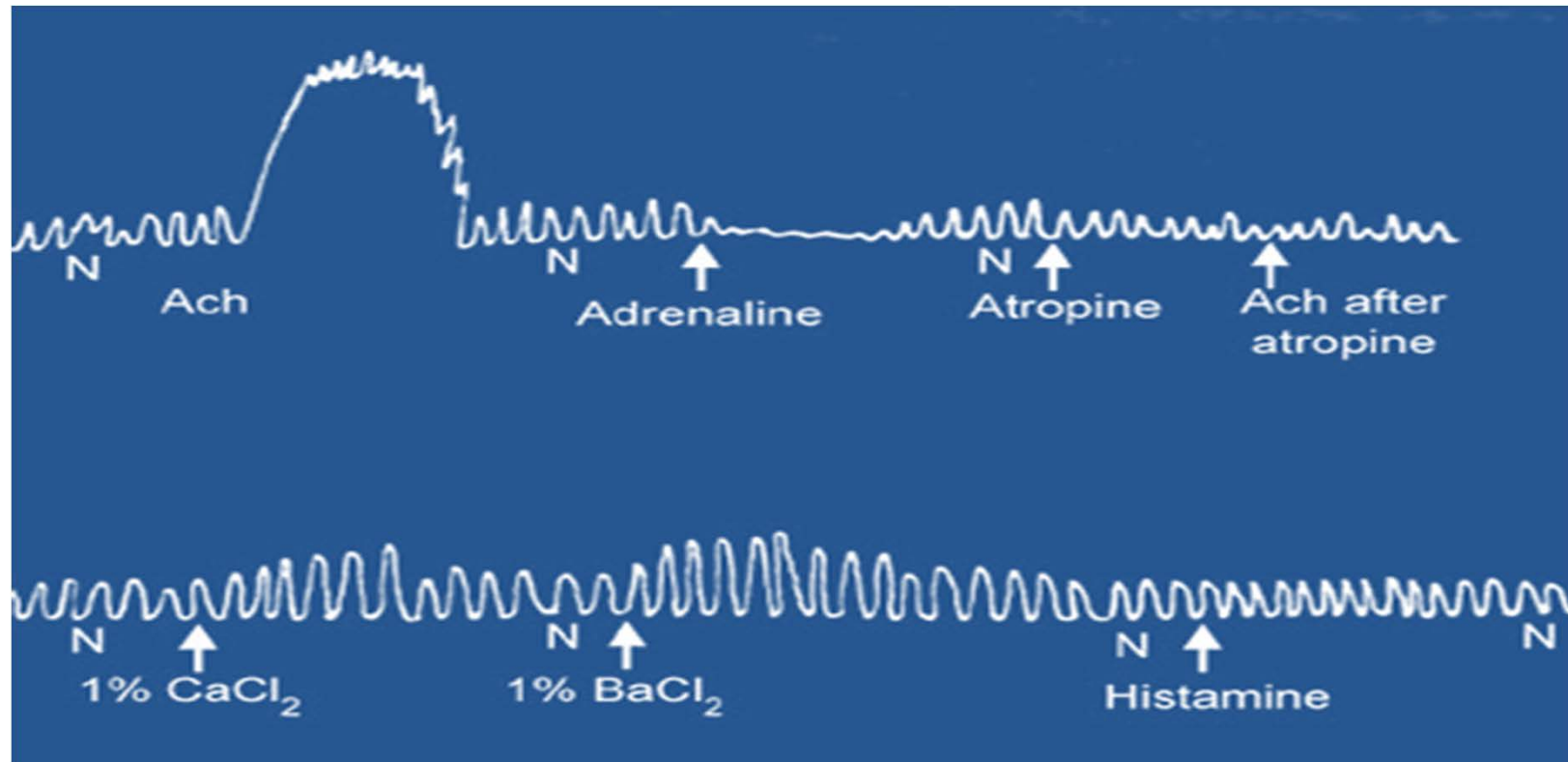
Parts of Kymograph Apparatus

Student Organ Bath- Parts and Arrangement



Components of Tyrodes Solution

Ingredient	Quantity
NaCl	16 g
KCl	0.4 g
MgCl	1.5 g
NaHCO ₃	2 g
NaH ₂ PO ₄	0.1 g
Glucose	4 g
CaCl ₂	0.4 g
Distilled water	2 L



N= normal

Observations and Explanations

Drug	Observation	Explanation
Acetylcholine		
Nicotine		
Adrenaline		
Atropine		
Histamine		
Barium Chloride		
Calcium Chloride		

Effect Of Acetylcholine and Neuromuscular Blocking Agents On Skeletal Muscles of Frog

By

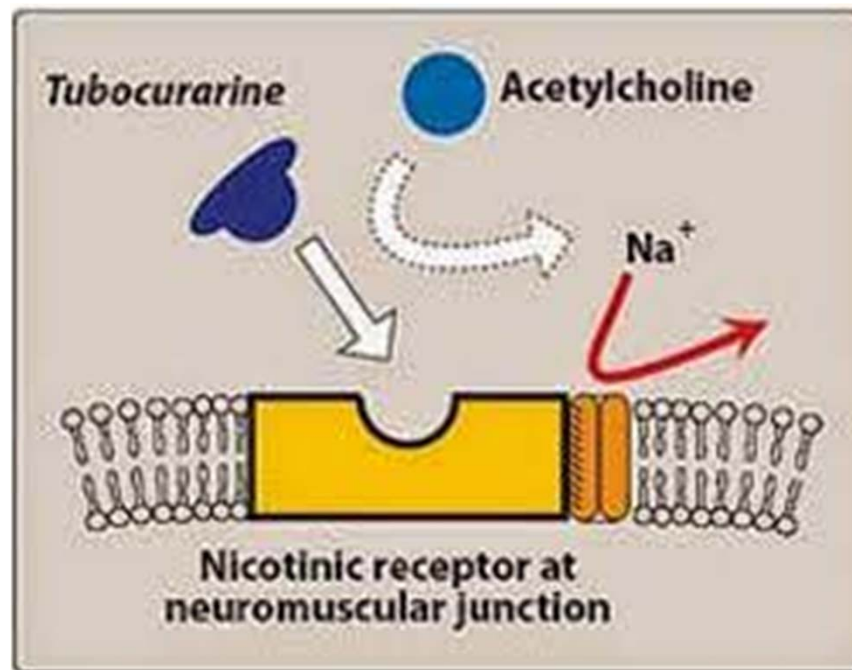
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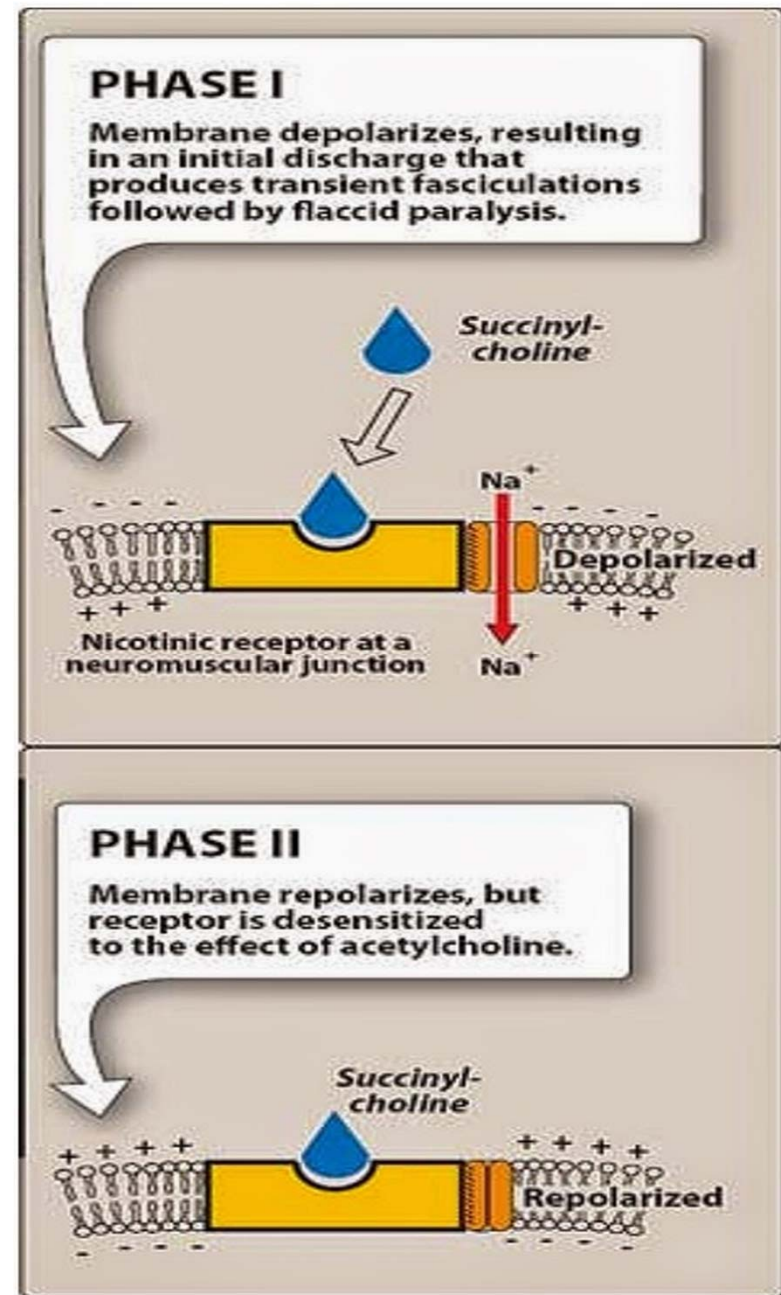
Pharmacology & Toxicology

Background

- Neuromuscular-blocking drugs **block neuromuscular transmission** at the neuromuscular junction causing **paralysis of the affected skeletal muscles**. This effect is accomplished via their action on the **post-synaptic acetylcholine receptors** {Muscular type nicotinic receptor (Nm) }.
- The neuromuscular blocking agents are **used primarily in conjugation with general anesthetics to provide muscle relaxation for surgery**, while the **centrally acting muscle relaxants** are **used mainly for painful muscle spasms and spastic neurological condition**.
- Broadly, there are **two** types of neuromuscular blocking agents; **Non-depolarizing neuromuscular blocking agents** and **the depolarizing neuromuscular blocking agents**.
- Non-depolarizing neuromuscular blocking agents like **(D-tubocurarin, Gallamine and Pancuronium)** **do not depolarizing the motor end plate of the skeletal muscle**.
- The depolarizing agents like **(Succinylcholine)** work by depolarizing the plasma membrane of the muscle fiber, similar to Acetylcholine.



Non-depolarizing agents



Depolarizing agents

Materials and Methods

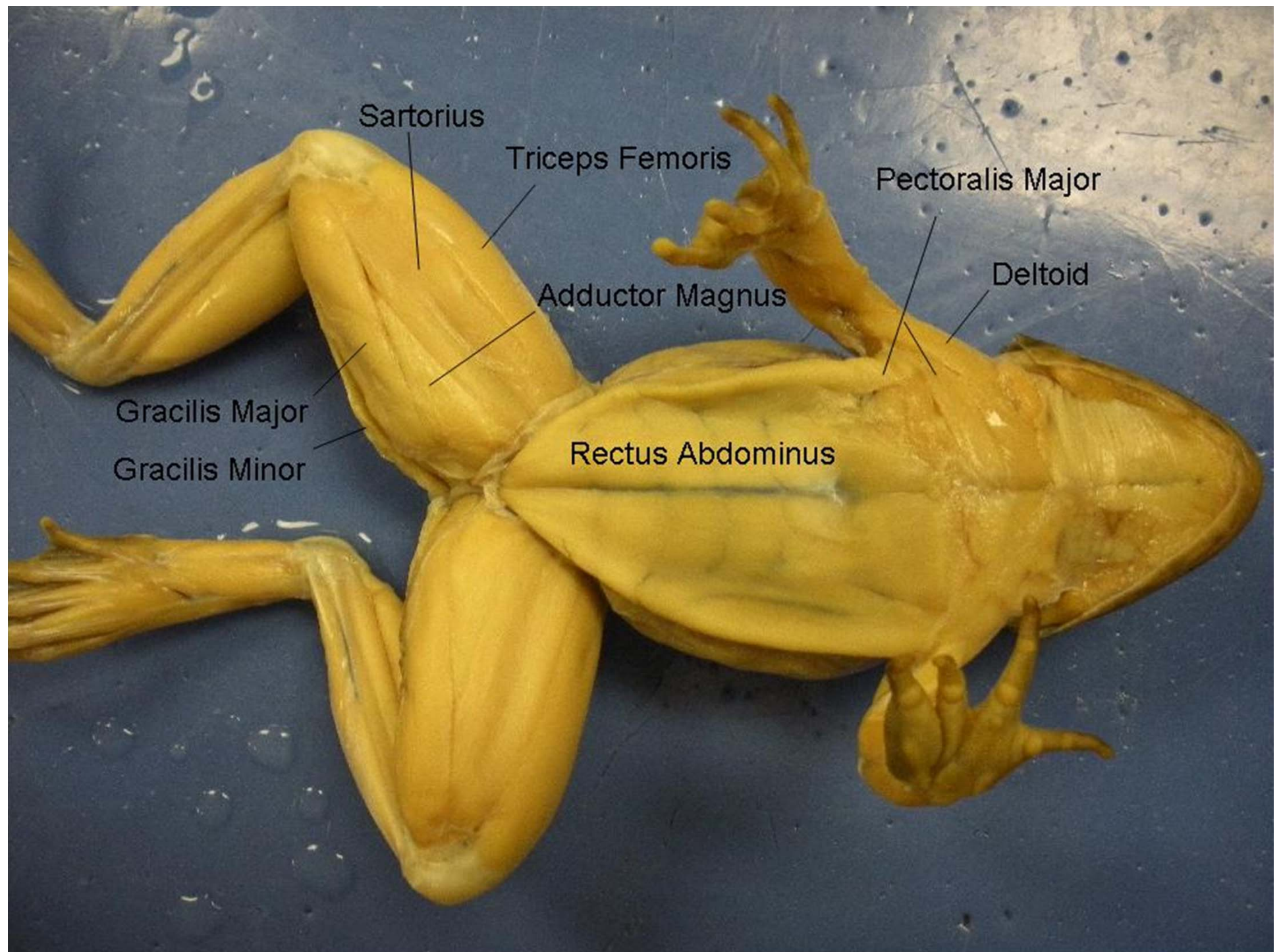
Animal tissue :

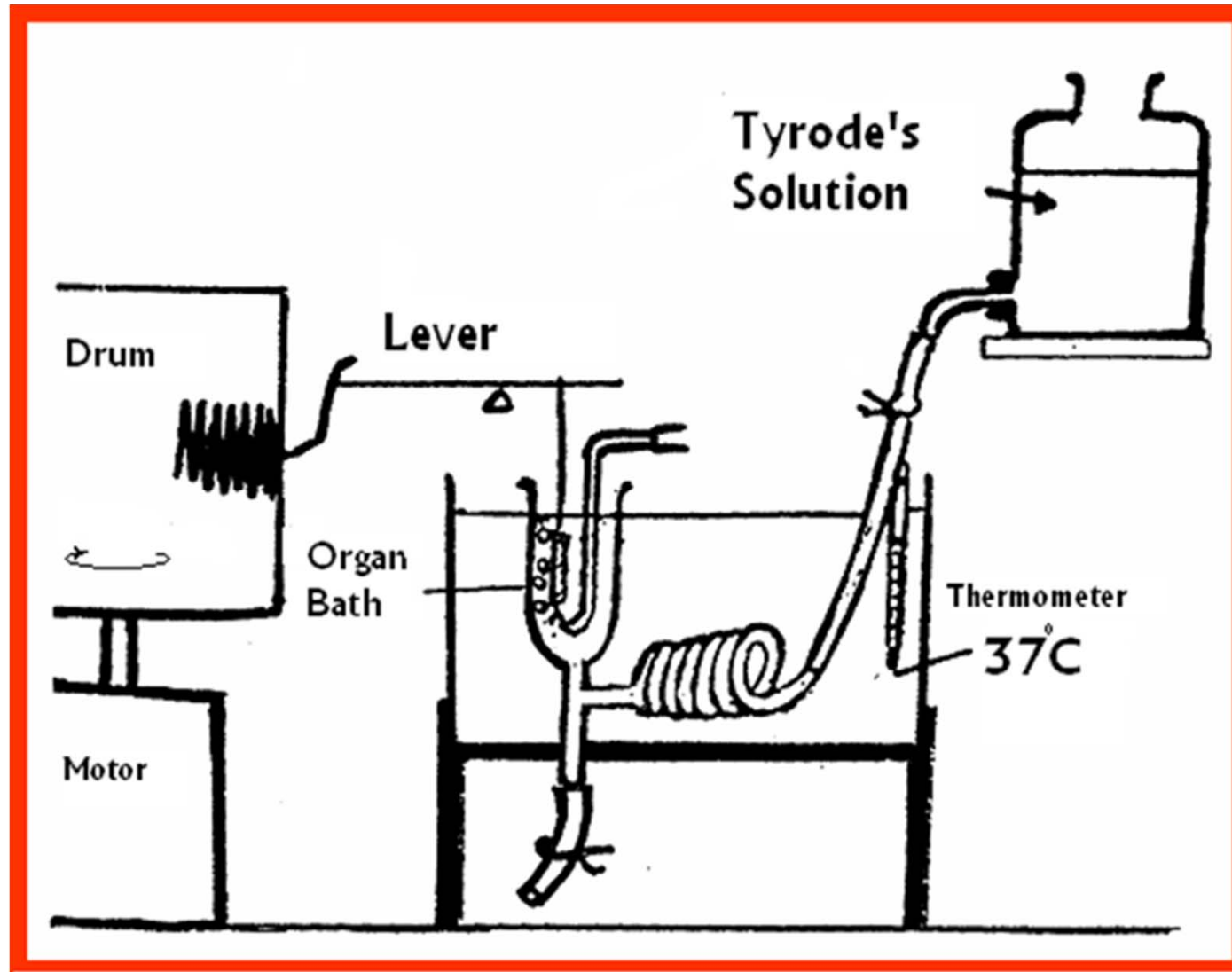
Frog (20 g) / *Rectus abdominus* or *Sartorius* muscle

Drugs :

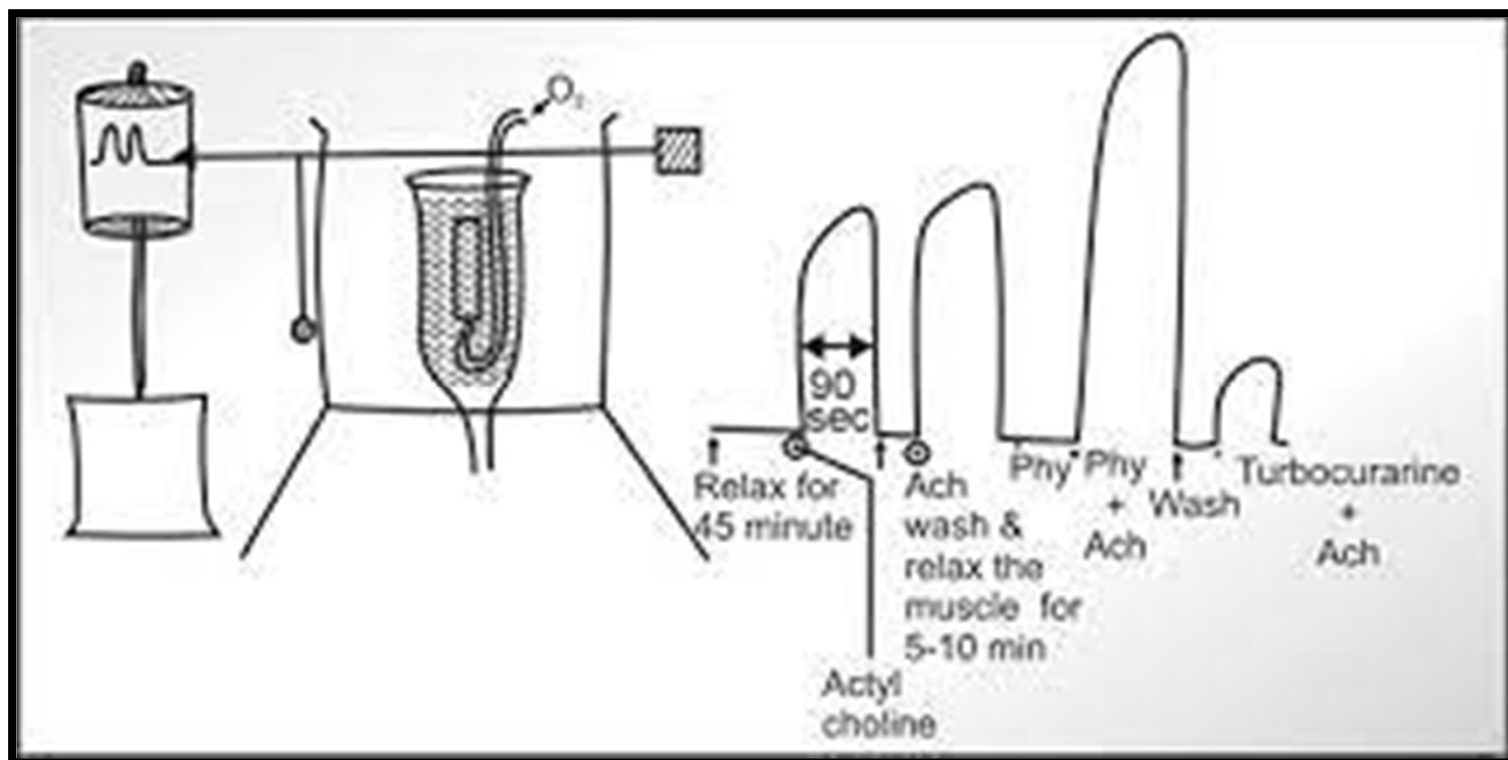
- Acetylcholine.
- D-tubocuranin.
- Succinylcholine
- Nicotine.
- Physostigmine
- Instruments
 - Kymograph apparatus set which composed from:

{ Kymograph apparatus, Organ bath, and Ringer or Tyrodes solution}.





Parts of Kymograph Apparatus



Observations and Explanations

Drug	Observation	Explanation
Acetylcholine		
Nicotine		
D-tubocurarine		
Physostigmine		
Succinylcholine		