

AIM: - To study the effect of Atropine on DRC of acetylcholine using isolated rat ileum preparation.

APPARATUS:

- Reservoir, tubing, hemostatic forceps, isolated organ bath, aeration tube, isotonic frontal writing lever and recording drum.

EXPERIMENTAL CONDITION:

- Physiological Salt solution (PSS) : Tyrode
- Temperature : 37 (+ or -) 10C
- Aeration : Carbogen (95% O₂ and 5% CO₂)
- Basal tension on the tissue : 500 gm
- Magnification of the response : 10 times
- Drug : Atropine (1 µg/ml)
Acetylcholine Chloride (1, 10 or 100 µg/mL)

PRINCIPLE:

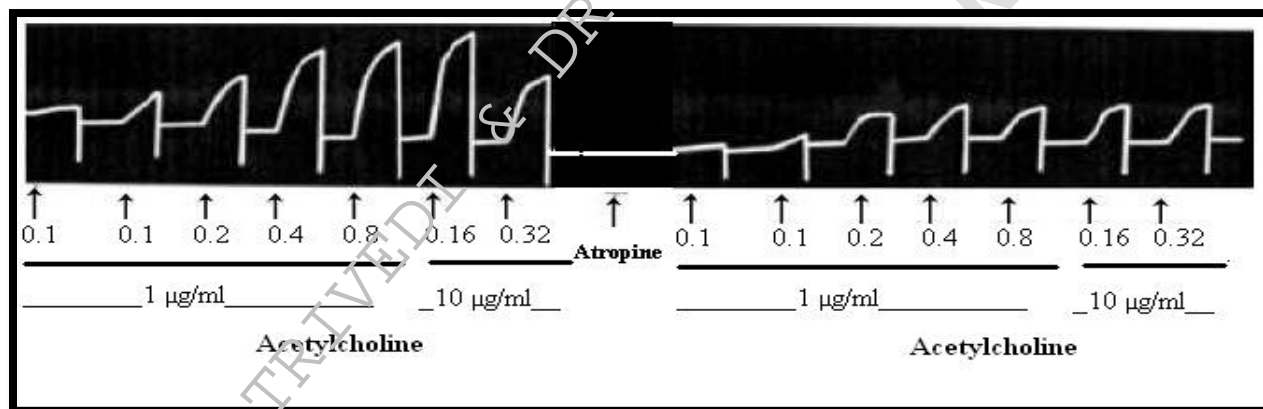
Atropine is a competitive antagonist of the actions of acetylcholine and other muscarinic agonists. Atropine competes for a common binding site on all muscarinic receptor. Ach increases the contraction of rat ileum with dose. In presence of atropine the action of Ach decreases. Atropine is a competitive antagonist, so as the dose of Ach increases the atropine effect decreases.

PROCEDURE:

1. The assembly is set up and the arrangements are made for the above mentioned conditions.
2. A rat is sacrificed as per CPCSEA recommendation guidelines.
3. The abdominal cavity is quickly opened and a piece of ileum is isolated. It is placed in a petri dish containing tyrode solution maintained at 37°C.
4. The mesentery of ileum is removed and lumen of ileum is cleaned by passing warm tyrode solution through it by pipette, then held at an angle of above 20-30°.
5. The tissue is mounted in organ bath. One end of tissue is tied to the aeration tube and the other end is connected to the isolated frontal writing lever.

- The tissue is allowed to stabilize for half an hour. During this period the PSS is changed after every 10 min.
- Once the tissue stabilized, graded doses of Ach are added to obtain maximum contractile responses.
- The normal Tyrode solution is changed with the tyrode containing atropine (1 $\mu\text{g/ml}$). The response of Ach are taken with same dose and continued till maximum effect is obtained.
- The graph is fixed and log-dose response curve is plotted to determine the nature of antagonism.

GRAPH:



OBSERVATION TABLE

Sr. No	Drug Name	Conc. of drug	Dose of drug in mL	Response in mm	% Response
1.	Ach	1 $\mu\text{g/mL}$			
2.					
3.					
4.					
5.		10 $\mu\text{g/mL}$			
6.					
7.					
8.		100 $\mu\text{g/mL}$			
9.					
10.					

OBSERVATION TABLE [In presence of Atropine]

Sr. No	Drug Name	Conc. of drug	Dose of drug in mL	Response in mm	% Response
1.	Atropine+	1 µg/mL			
2.					
3.					
4.					
5.		10 µg/mL			
6.					
7.					
8.		100 µg/mL			
9.					
10.					

Result:-

QUESTIONS:

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1. Discuss antagonism of atropine.
2. Discuss the mechanism of action of Ach & atropine