EXPERIMENT NO.: 7 **DATE:**

AIM: TO STUDY THE DOSE RESPONSE CURVE OF ACETYLCHOLINE ON RECTUS ABDOMINAL MUSCLES OF FROG

APPARATUS:

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

EXPERIMENTAL CONDITION:

Physiological Salt solution (PSS)	: Frog's ringer
Temperature	: 37 (+ or -) 1^0C
Aeration	: Carbogen (95% O_2 and 5% CO_2)
Basal tension on the tissue	: 1 gm
Magnification of the response	: 10 times
Drug	: Acetylcholine Chloride (1, 10 or 100 µg/mL)
Molecular weight of drug	: 181.78

THEORY:

Graded Dose Response Relationship Curve of Acetylcholine on Frog Rectus Muscle:

In graded dose response curve,

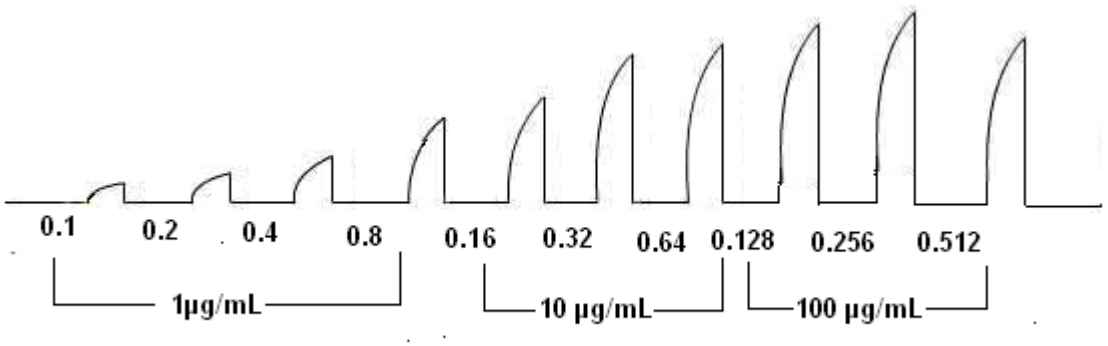
- Single biological unit, either a single animal or an isolated tissue is used.
- It depends upon an observation that graded increase (in geometric proportion) in the dose of drug gives proportional rise in the magnitude of biological response.
- Actually, beyond a specific dose level, biological response increases in proportion to the increase in dose. This dose level is known as 'Threshold dose'.
- Such proportional rise in biological response occurs only up to a dose level known as 'Ceiling dose', beyond which a steady biological response is achieved even after increasing the doses.
- Shape of Graded DRC, when plotted as 'dose Vs Response' is a 'Parabola'
- Shape of 'Log Dose Vs Response' curve is a 'Sigmoid' line or is having 'S' like shape.

PROCEDURE:

- The assembly is set up and the arrangements are made for the above mentioned condition.
- A frog is sacrificed as per CPCSEA recommended guidelines.

- The frog is placed in a tray with ventral side facing up. The skin is incised longitudinally in the middle of abdomen from pubic symphysis to the sternum. Two recti are situated on the either sides of the midline. They are dissected out by cutting its attachment from pubic symphysis from below, sternum from above and abdominal muscles from sides. The recti can be easily differentiated from other muscles because the recti are white and shiny whereas other muscles are pinkish in color.
- Two recti are separated from the midline and one recus muscle is mounted in the organ bath. One end of the muscle is tied to the aeration tube and the other 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 ten min. once the tissue is stabilize, graded doses of Ach are added to at defined time period of interval for obtain contractile responses.
    - 00 sec: Start the drum and record a base line for 30 sec.
    - 30 sec: Add the first dose of drug in organ bath and take the response for another 30sec.
    - 60: Stop the drum and give wash until the tip of lever rich to baseline.
    - Continue above procedure for next doses.
- Measure the height of concentration at different doses of Ach.
- Tabulate the observations into three columns as Dose of Ach, Height of concentration (in mm) and % response.

GRAPH:



OBSERVATION TABLE:

Standard example:

Sr. No	Drug Name	Conc. of drug	Dose of drug in mL	Response in mm	% Response
1.	Ach	1 µg/mL	0.1	2	20
2.			0.2	5	25
3.			0.4	7	35
4.			0.8	9	45
5.		10 µg/mL	0.16	12	60
6.			0.32	14	70
7.			0.64	16	80
8.		100 µg/mL	0.128	17	85
9.			0.256	20	100
10.			0.512	12	60

Observed result:

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

TEACHER'S SIGNATURE