

### AIM :

To study the muscle relaxant property of Diazepam (muscle-grip strength) in mice using Rota-rod apparatus.

### REQUIREMENTS :

**Animal** : Mice (20-25 g)

**Solutions** : Diazepam

**Instrument** : Rota-rod apparatus (INCO)

### PRINCIPLE :

- One of the important pharmacological actions of antianxiety agents of benzodiazepine class of drugs is muscle relaxing property.
- The skeletal muscle relaxation together with taming or calming effect these agents reduce anxiety and tension.
- The loss of muscle-grip is an indication of muscle relaxation.
- This effect can be easily studied in animals using **inclined plane** or **rotating rods**.
- The angle of the slope of the inclined plane, or the rate of rotation of the rod should be adjusted such that a normal mouse can stay on the plane or on the rod for an appreciable period (3-5 min) of time.
- The difference in the fall off time from the rotating rod before and after diazepam treatment is taken as index of muscle relaxation.



1. Weigh and number the mice.

2. Turn on the rota-rod & select an appropriate speed (20-25 rpm is ideal).

3. Place the animal one by one on the rotating rod.

4. Note down the 'fall off time' when the mouse falls from the rotating rod.

5. A normal (untreated) mouse generally falls off within 3-5 minutes.

6. Inject diazepam (4 mg/Kg) to all the animals.

7. After 30 min repeat the experiment as done in step No. 3 and note the fall off time.

8. Compare the fall off time of animals before and after diazepam treatment.

### OBSERVATIONS :

| Sr. No. | Body weight (g) | Treatment | Fall off time (sec) |            |                  |
|---------|-----------------|-----------|---------------------|------------|------------------|
|         |                 |           | Before drug         | After drug | % change in time |
| 1       | 22              | Diazepam  | 32                  | 4          |                  |
| 2       | 20              | Diazepam  | 31                  | 8          |                  |
| 3       | 22              | Diazepam  | 33                  | 6          |                  |
| 4       | 23              | Diazepam  | 29                  | 4          |                  |
| 5       | 24              | Diazepam  | 30                  | 9          |                  |
| 6       | 20              | Diazepam  | 33                  | 7          |                  |
| Mean    |                 |           |                     |            |                  |

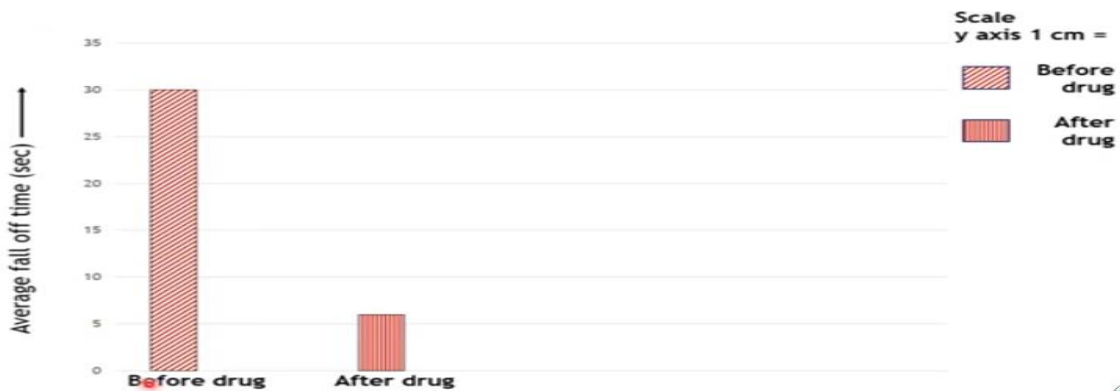
### CALCULATIONS :

$$\% \text{ change in time} = \frac{\text{Fall off time before treatment} - \text{Fall off time after treatment}}{\text{Fall off time before treatment}} \times 100$$

### GRAPH :

Plot a graph of

y axis : Average Fall off time (sec) before drug treatment and after drug treatment



### INFERENCE :

Reduction in fall off time of the animal indicates the muscle relaxant property of Diazepam.

## REFERENCES :

- 1) S. K. Kulkarni; Handbook of Experimental Pharmacology;  
4<sup>th</sup> Edition; Vallabh Prakashan; 136 - 137.
- 2) X-cology Experimental Pharmacology, Pragati Books Pvt. Ltd.  
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