Lab. 3

To study the effect of various tranquilizers and sedatives on motor co-ordination by Rota Rod test in rodents

Presented by:

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Study of the effect of various tranquilizers and sedatives on motor coordination using Rota-Rod apparatus

BACKGROUND

A sedative is a type of drug that decreases irritability or excitability where as tranquilizer reduces anxiety without causing extreme sedation. Tranquilizers are of two types according to their pharmacological actions which includes minor and major tranquilizers. Minor tranquilizers (e.g. benzodiazepines) or anxiolytics are used to inhibit anxiety produces skeletal muscle relaxation and major tranquilizers or antipsychotic agents or neuroleptics are used in major states of mental disturbances to induce relaxation.[1] Disturbance in tone maintenance and balance of posture are signs of centrally mediated muscle relaxation. Motor coordination has been evaluated in mice and rats by the rotarod test. An animal fails to stay on a rotating rod when its muscle is relaxed. Considering this principle the instrument is designed. The animal will be placed on a rotating horizontal rod and the animal will walk to remain upright and not fall off. The timing and speed can be adjusted.[2]

Aim of this experiment is to study the effect of various tranquilizers & sedatives on motor coordination using Rota-Rod apparatus.

REQUIREMENTS

Apparatus: Rotarod

Drug: Diazepam (2 mg/kg) dissolved in normal saline intraperitoneally

Needles, syringes, normal saline, etc.

❖ The Rotarod Test

- **Principle**

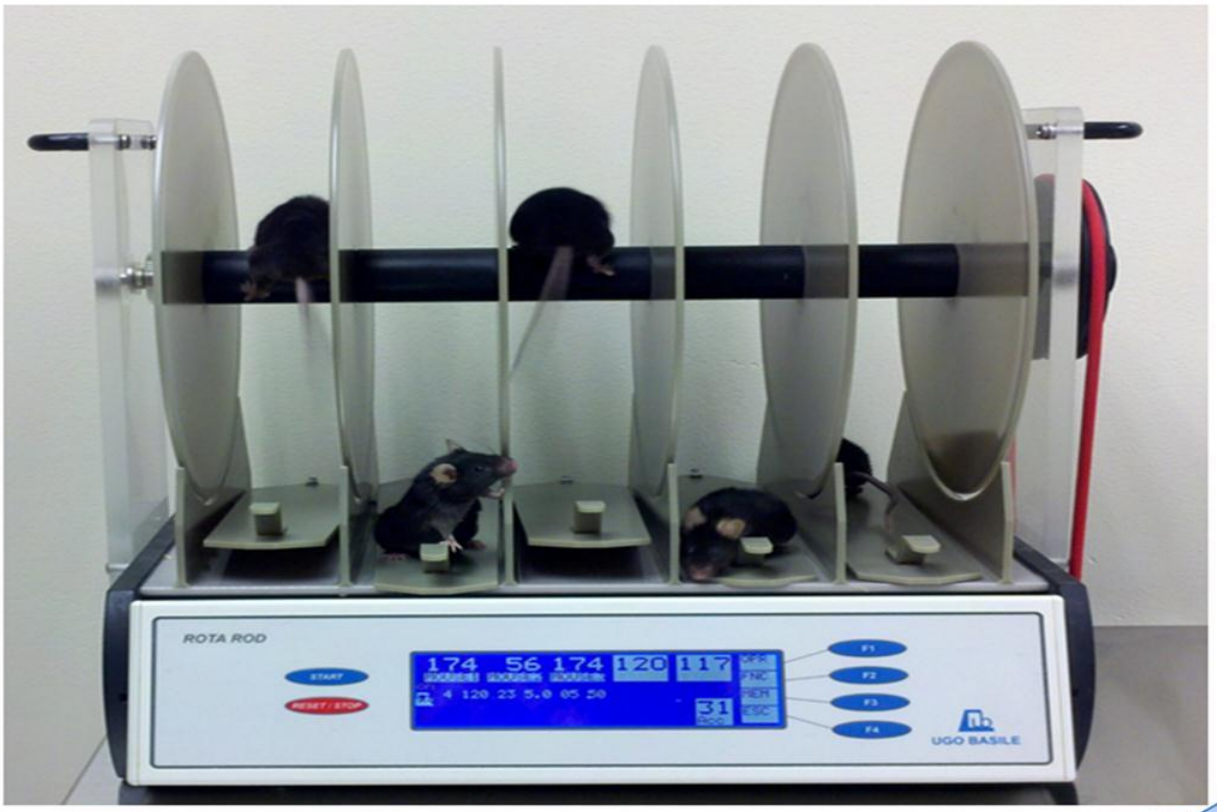
The rotarod test, which requires animals to balance and walk on a rotating cylinder, is a widely used test to measure coordinated motor skills .

In 1957, Dunham and Miya suggested that neurological deficit in rats and mice were indicated by inability of the animal to remain on a revolving rod for the test period

PROCEDURE

Rota-Rod apparatus consists of horizontal metal rods with 3 cm diameter at each compartment.[3] The metal rods are attached to a motor which is rotated at a speed of 2 rpm. The rod with the help of discs,

is separating multiple sections and so multiple numbers of mice can be tested simultaneously. Insert the main cord in the main socket and switch on the instrument. The indicator light will glow up and rod will start rotating. Note the fall of time of the animals before and after injection. Then record and count the number of falls on the digital display. Record percentage of decrease in falls.



Observation table:

Sl. No.	Body wt. (in grams)	Drug and Dose	Falling time (in sec)		% Decrease in activity
			Before drug injection	After drug injection	
1	30				
2	25				
3	25				
4	30				

% Decrease =(Falling time (Before drug injection- After drug injection))/(Before drug injection) ×100

CONCLUSION

From this study, it was observed that motor coordination was decreased after the drug administration. This can be concluded that diazepam has skeletal muscle relaxation activity.