

# EVALUATION OF ANTICONVULSANT ACTIVITY OF TURNERA DIFFUSA.

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# INTRODUCTION

- Common name of *Turnera diffusa* is DAMIANA
- Small yellow flowers bloom in early to late summer.
- The medicinal part of the plant is its leaves, which are harvested during the flowering season.
- Damiana has a long history of use in traditional herbal medicine throughout the world.
- It is thought to act as aphrodisiac, antidepressant, diuretic, cough-suppressant, mild laxative.



# NEED FOR STUDY:-

- *Epilepsy* describes a condition in which a person has *recurrent* seizures due to a chronic, underlying process.
- A *seizure* (from the Latin *sacire*, "to take possession of") is a paroxysmal event due to abnormal excessive or synchronous neuronal activity in the brain.
- Seizures are result of a shift in the normal balance of excitatory and inhibitory mechanism in the CNS.
- Various factors can cause this imbalance like stress, drugs, environmental factors, endogenous factors – genetic, infections, tumors.

# Continued.....



- Epilepsy affects 1% of world population.
- Epilepsy has been well controlled with the available current anti epileptic drugs(AEDs).
- Epilepsy and its treatment alters the quality of life of people with the disorder.
- Hence there is continuous need for more effective newer AEDs.

# OBJECTIVE:-



- TO EVALUATE THE ANTICONVULSANT ACTIVITY OF TURNERA DIFFUSA.

# MATERIALS USED:-

- 10 GROUPS OF 6 MICE IN EACH GROUP, WEIGHING 20-30gm EACH.
- AQUEOUS EXTRACT OF TURNERA DIFFUSA IN DOSES OF 50 mg/kg, 75mg/kg, 100mg/kg.
- SODIUM VALPROATE (50mg/kg)
- PENTYLENETATRAZOLE 70mg/kg BW sc.
- 0.9% NORMAL SALINE.

**Animals:** Albino mice of either sex weighing between 20-30gm were obtained from Central Animal House, SSIMS & RC, Davangere. The animals were housed under standard conditions with free access to food and water and *ab libitum*. The study was approved from the Institutional Animal Ethics Committee, SSIMS & RC, Davangere.

# METHOD :-

TURNERA DIFFUSA is tested for anticonvulsant property in two in vivo models of experimentally induced seizures using -

## 1. PENTYLENETETRAZOLE

End point being duration of occurrence of tonic clonic seizures.

## 2. MAXIMUM ELECTROSHOCK SEIZURE (MES)

End point is duration of occurrence of hind limb extension.



# PTZ MODEL



Group 1(control): Normal Saline 1ml

Group 2(standard) : Sodium Valproate (50mg/kg)

Group 3:Turnera diffusa (50mg/kg)

Group 4:Turnera diffusa (75mg/kg)

Group 5:Turnera diffusa (100mg/kg)

All drugs were administered orally 30min before administration of PTZ.

- The mice were marked for identification as per groups and were placed in separate labeled cages accordingly.
- All the animals were treated with PTZ 60mg/Kg subcutaneously (s.c.).
- They were observed for a period of 60 minutes during which the onset of seizures and their duration were noted.
- Following parameters were studied-  
Seizure latency (time taken for onset of seizure)  
Duration of seizures

The occurrence of seizures for more than 5 seconds was taken as a positive response and its increase in latency and decrease in duration of seizures or total abolition was taken as protective for the same.

## MES MODEL:-

Group 1(control): Normal saline 1ml

Group 2(standard): Sodium Valproate (50mg/kg)

Group 3:Turnera diffusa (50mg/kg)

Group 4:Turnera diffusa (75mg/kg)

Group 5:Turnera diffusa (100mg/kg)

All drugs were administered orally, 30min before induction of MES.

- As per the grouping, mice were marked for identification and placed in separate labeled cages.
- They were subjected to maximal electroshock stimulation through transauricular electrodes (covered in cotton wool and moistened with distilled water) with a current strength of 60mA in 0.2 sec.
- They were observed for a period of 60 minutes during which the different phases of seizures and their duration were noted.

- Following parameters were studied-  
Hind Limb Flexion  
Hind Limb Extension  
Clonus  
Postictal Depression (from the end of clonus till the animals could regain consciousness and walk away)

The occurrence of a tonic hind limb extension was taken as a positive response for MES seizures and decrease in duration or abolition of response was taken as protective for the same.





## Statistical Analysis:

Descriptive data that include mean, standard deviation and range value were found for each group and used for analysis. One way analysis of variance (ANOVA) was used for simultaneous multiple group comparison followed by statistical software Graph Pad In Stat version 3.06.

Significance is established for a probability value (p value) of less than 0.05 and is considered highly significant when  $p < 0.001$ .



# RESULTS:-

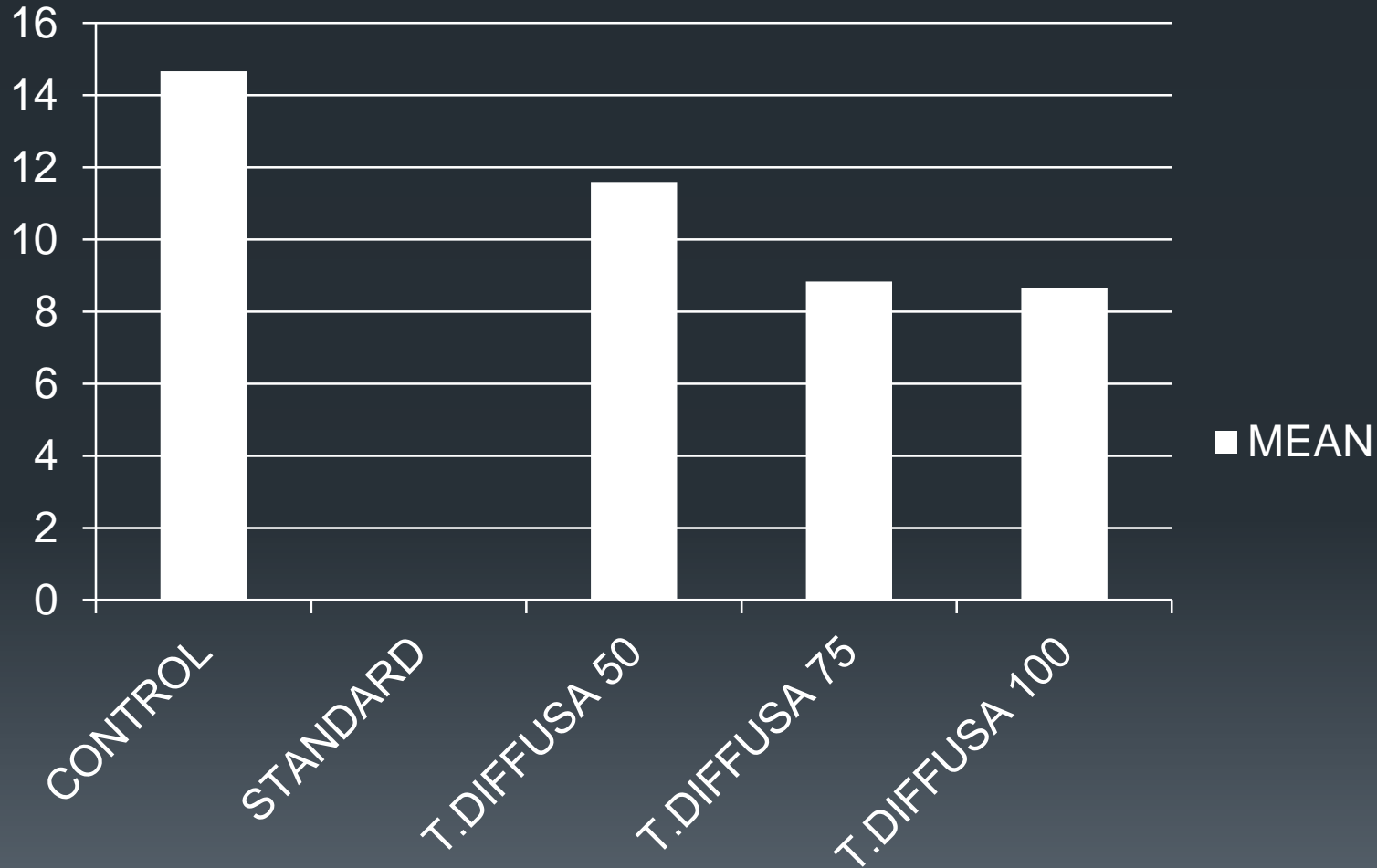
## MES MODEL- TONIC HIND LIMB EXTENSION

	CONTROL	STANDARD	T.Diffusa 50mg/kg	T.Diffusa 75mg/kg	T.Diffusa 100mg/kg
MEAN	14.67	0	11.6	8.83	8.66
S.D	2.16	0	1.329	1.169	1.21
S.E.M	0.88	0	0.542	0.477	0.494

# STATISTICAL ANALYSIS SHOWING COMPAISON OF TONIC HIND LIMB EXTENSION IN MES MODEL:-

GROUP	MEAN + SD	DIFFERENCE BETWEEN GROUPS		
		GROUPS COMPARED	MEAN DIFFERENCE	SIGNIFICANCE p VALUE
1	14.67 ± 2.16	1-2	14.667	<0.001
2	0 ± 0	1-3	3.5	<0.01
3	11.6 ± 1.329	1-4	5.823	<0.001
4	8.83 ± 1.169	1-5	6	<0.001
5	8.66 ± 1.211			

## MEAN



# RESULTS:-

- PTZ MODEL : LATENCY

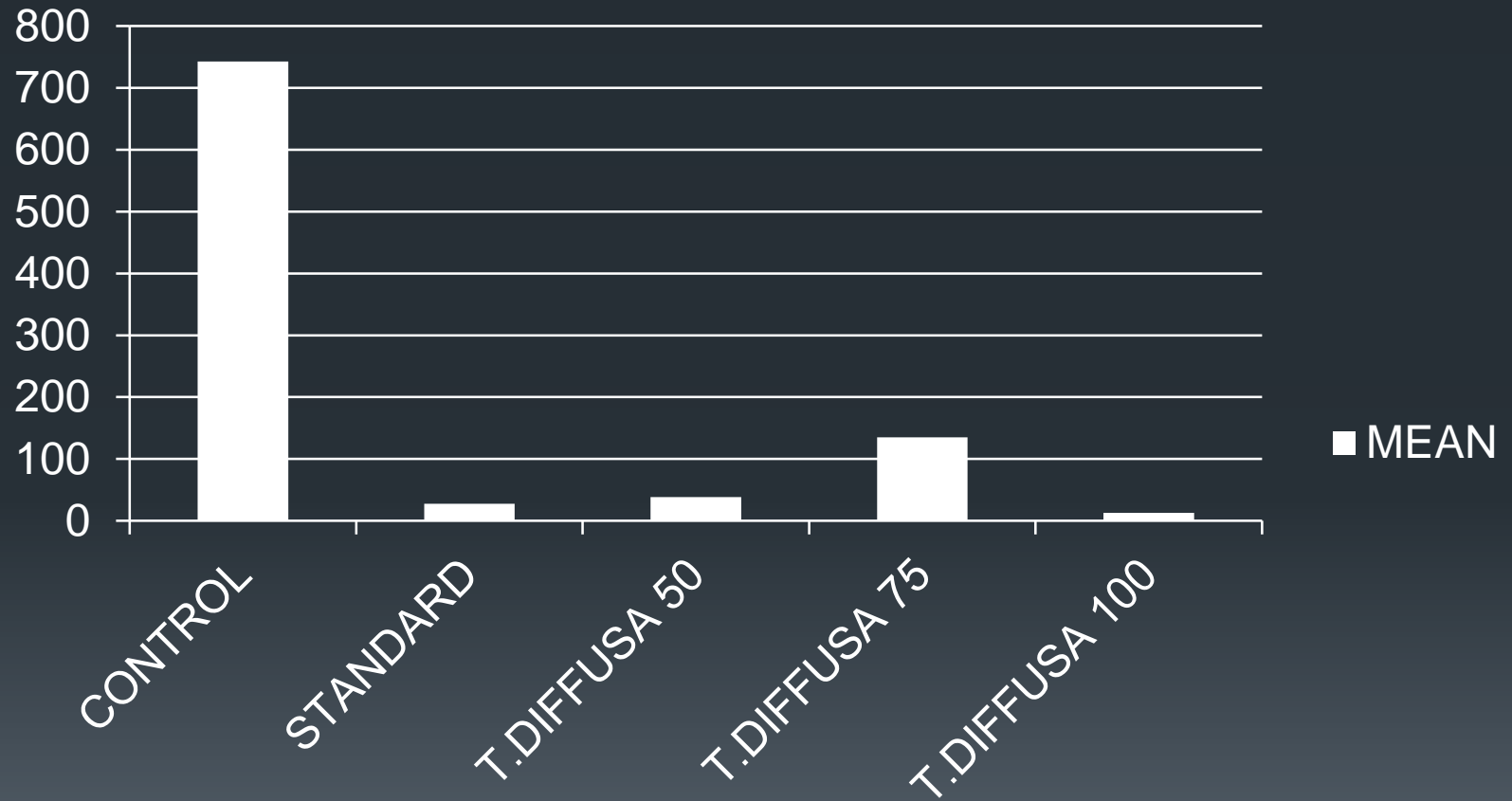
	CONTROL	STANDARD	T.Diffusa 50mg/kg	T.Diffusa 75mg/kg	T.Diffusa 100mg/kg
MEAN	148.5	1800	1150	1120	1290
S.D	6.804	0	338.17	536.21	501.64
S.E.M	2.778	0	138.06	218.91	204.79

# STATISTICAL ANALYSIS SHOWING COMPARISON OF LATENCY (ONSET) IN PTZ MODEL



GROUP	MEAN + SD	DIFFERENCE BETWEEN GROUPS		
		GROUPS COMPARED	MEAN DIFFERENCE	SIGNIFICANCE p VALUE
1	148.5 ± 6.804	1-2	-1651.5	<0.001
2	1800 ± 0	1-3	-1001.5	<0.001
3	1150 ± 338.17	1-4	-971.50	<0.001
4	1120 ± 536.21	1-5	-1141.5	<0.001
5	1290 ± 501.64			

## MEAN



# DISCUSSION



- *Turnera diffusa* exhibited significant anticonvulsant activity .
- At a dose of 50mg/kg, 75mg/kg & 100mg/kg anticonvulsant activity was significant and comparable with the standard Sodium Valproate (50mg/kg).

# CONCLUSION:-



- This animal experimentation study gives evidence of anticonvulsant effects on albino mice.
- Further evaluation of the anticonvulsant activity of *Turnera diffusa* will be of great advantage.





THANK YOU