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Evaluation of Anxiolytic Activity Methanolic Extract of *Caltropis Gigantea* Flowers

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ABSTRACT

The present study was undertaken to evaluate Anxiolytic activity of methanolic extract of caltropis gigantea flowers. Of caltropis gigantea (200,400 mg/kg) was studied. Diazepam used as a standard drug (2mg/kg), by using EPM Model. The diazepam and all the doses of extract had showed significant Anxiolytic activity the finding this experimental animal study indicates that caltropis gigantea posses Anxiolytic activity

Keywords: Anxiolytic activity Elevated plus maze model, diazepam, caltropis gigantea flowers

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INTRODUCTION

Human anxiety is defined as a feeling of apprehension, uncertainty or tension stemming from the anticipation of imagined or unreal threat ¹. Anxiety affects one-eighth population worldwide and has become an important research area in the field of psychopharmacology. Benzodiazepines (BZDs), barbiturates, tricyclic antidepressants (TCA's) have been used for long time to treat anxiety disorders. The serious side effects associated with these drugs, namely rebound insomnia, sedation, muscle relaxation, withdrawal and tolerance (BZD's, barbiturates and alcohol), sexual dysfunction, ant- cholinergic, antihistaminic effects (TCA's) have limited their use in patients ². Due to this many pharmaceutical companies are conducting studies to find an alternative medicine or plant-derived medications with more specific anxiolytic effects ³. Plants, as a source of medicine, have been used throughout history for treatment of mood disorders (Schmidt et al. 2008) (anxiety, depression, sleeplessness, and physiologically related conditions). Today there are over 10 medicinal plants that are used commercially as regulated Natural Health Products (NHPs), or EU phytomedicines to treat mood disorders related to anxiety (Blumenthal et al. 2000). These are used in North America as over the counter medications by both the general public and diagnosed patients. There is now growing interest in these products among some physicians in because patient compliance is high and evidence of efficacy is available. The two most widely used botanicals are St-John's Wort (SJW) (*Hypericum perforatum*) and Kava Kava (*Piper methysticum*) (Linde 2009;Sarris & Kavanagh 2009b). These medicinal plants have been well studied pharmacologically and phytochemically and there is extensive animal behavior and clinical research supporting their efficacy. Unfortunately, both of these NHPs have come under scrutiny for unrelated toxicology issues(Linde 2009;Sarris & Kavanagh 2009a). SJW has recently been found to have potentially life threatening drug interactions with certain types of drugs, while Kava has been withdrawn from some markets due to idiosyncratic hepatotoxicity in a small number of individuals.

MATERIALS AND METHOD

Animals

Rats were used for the study. The animals were housed in groups of six and maintained under standard conditions (27±2°C, relative humidity 44 - 56% and light and dark cycles of 10 and 14 hours respectively) and fed with standard rat diet and purified drinking water ad libitum for 1 week before and during the experiments. Rat weighing 150-200 g, breed in the animal house, .They were

employed for assessing Anxiolytic activity. Rats were housed in a group of six in clean cages and 12 hr photo period. The bedding material of the cages was changed every day.

Chemicals

All the chemicals and reagents used for this study were of analytical grade

Plant Material

The flowers of the plant *Calotropis gigantea* were procured from Narasaraopet, Guntur (dist) the flowers were cut into small pieces and shade dried. The dried material was then pulverized separately into coarse powder by a mechanical grinder. The resulting powder was then used for extraction.

Preparation of Methanolic Extract

The powdered drug was dried and packed well in Soxhlet apparatus and extracted with 1500 ml of methanol for seven days. The extract was concentrated and dried using Rotary flash evaporator. It was kept in dessicator until used

METHOD

Screening model For Anxiolytic Activity:

Elevated Plus Maze

The plus-maze apparatus, consisting of two open arms (16 x 5 cm) and two closed arms (16 x 5 x 12 cm) having an open roof. Four groups of rats are taken each containing 6 rats.

The vehicle group will only get the water as dialy dose

The Methanolic extract of *Calotropis gigantea flowers* (200 and 400 mg/kg) and vehicle were administered for 5 days once daily p.o. and the last dose was given on the 5th day, 60 min prior to experiment. The standard drug (Diazepam) was given at a dose of 2 mg/kg p.o.60 min before starting the experiment.

RESULTS AND DISCUSSION

Anxiolytic effect of methanolic flowers extract of *Calotropis gigantea*:

Table 1: Effect of Methanolic extract of *Calotropis gigantea* on animals in Elevated Plus Maze model:

Group	Treatment	Time spent in the open arm (s)	Time spent in the enclosed arm (s)	No. of entries in enclosed arm	No. of entries in open arm
1	Vehicle	54.87± 1.51	210± 7.90	3.2± 1.70	12.3± 1.70
2	Diazepam	120.54± 1.44***	45.67± 7.10***	6.8± 1.20***	12.9± 1.2***
3	Extract (200mg/kg)	75.66± 1.10***	93.52± 6.80***	2.12± 1.34**	12.3± 1.40*
4	Extract (400mg/kg)	85.37± 1.73***	115.23± 9.40***	3.76± 1.10*	11.5± 1.30*

Values are mean \pm SEM (n=6) one way ANOVA followed by Turkey's test. Where * represents significant at $p < 0.05$, ** represents highly significant at $p < 0.01$, *** represents very significant at $p < 0.001$ and * represents significant at $p < 0.05$, ** represents highly significant at $p < 0.01$ *** represents very significant at $p < 0.001$ when compared with disease Vehicle and Diazepam respectively.

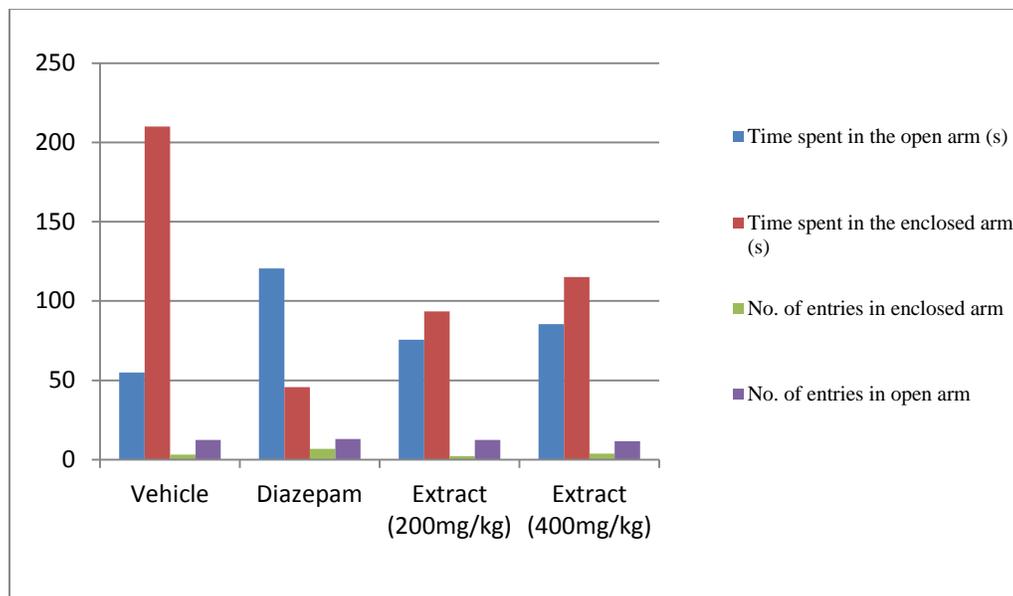


Figure 1: Effect of Methanolic extract of *Calotropis gigantea* on animals in Elevated Plus Maze model

The results showed that the number of open arm entries and time spent in the open arms were increased and number of closed arm entries and time spent in the closed arms were decreased significantly in the extract treated groups which was comparable with the standard Diazepam.

CONCLUSION

The present study indicates that the methanolic flowers extract of *Calotropis gigantea* exhibited Anxiolytic activity. The results showed that the number of open arm entries and time spent in the open arms were increased and number of closed arm entries and time spent in the closed arms were decreased significantly in the extract treated groups which was comparable with the standard Diazepam.

Further studies is needed for the isolation of an active compound, and its exact mechanism of action of methanolic extract of *Calotropis gigantea*

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