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ANXIOLYTIC ACTIVITY OF *OCIMUM SANCTUM* LEAF EXTRACT

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ABSTRACT: *The anxiolytic activity of Ocimum sanctum leaf extract was studied in mice. O.sanctum leaf extract produced significant anxiolytic activity in plus – maze and open field behaviour test models. The effect was compared with diazepam, a standard antianxiety drug.*

INTRODUCTION

Ocimum Sanctum (Tulsi) is medicinal plant commonly grown in India and considered sacred by many Indians. Different parts of this plant have been reported to exhibit several medicinal properties[1,2]. Pharmacological properties like anabolic, hypotensive, cardiac depressant, smooth muscle relaxant, antifertility and heptaprotective activity have been reported by several workers3[-5]. Antistress activity of *O. sanctum* leaf extract has also been reported[6]. A survey of the relevant literature has indicated that the systematic study on possible anxilytic activity of *O. sanctum* leaf extract seems to be dubious. The present investigation has therefore been designed to study the same using elevated plus maze and open field behaviour paradigms of anxiety and compared with a standard anxiolytic drug, diazepam.

MATERIALS AND METHODS

The method of extractions or material was essentially the same as described by Bhargava et al[6]. The air dried powder of the leaves of *O. sanctum* was extracted by percolation at room temperature with 70 per cent ethyl alcohol. The extract was concentrated under reduced pressure (bath temperature 50^0C) and finally dried in a vacuum desicator. The residue of *O. sanctum* (OSE) was dissolved in propylene glycol at a concentration of 100 mg/ml and was used in experiments.

Male albino rats mice (3-4 months old) weighing 20 – 25 g of Wistar stain were used. Animals were maintained under control conditions of light (12 hour/24 hour) and temperature (23 ± 1^0C). Food pellets (Hindustan Lever Ltd., Bombay) and tap water was provided *ad libitum. O. sanctum* leaf extract (200 mg/kg, po) was administered with the help of feeding cannula once daily for 7 days. Control animals were treated similarly but with propylene glycol. Diazepam (1 mg/kg, ip) was used as the standard anxilytic agent for comparison and was administered 15 minutes before experimentation, 6 animals were used for each dose experiment. The following paradigms were used to assess the anxilytic activity.

(a) Open – field test in mice

Drug or vehicle treated mice were placed individually at one corner of the apparatus for a period of 3 minutes and the number of

squares crossed periods of immobility, number of rearing and faecal pellets were noted. The apparatus was cleaned after each use.

(b) Elevated Plus – maze test in mice

Mice, pretreated with drug or vehicle were placed individually in the centre of the maze, facing an enclosed arm, and thereafter the number of entries and time spent on open and closed arms was recorded during the next 5 minutes. An arm entry was defined as all four feet in the arm. The apparatus was cleaned after each experiment.

Results were statistically analysed by the analysis of variance F-test and of multiple comparison procedure using Scheffe's Method.

RESULTS

Table I shows that *O. sanctum* leaf extract (200 mg/kg) produced significant anxilytic activity in open field behaviour paradigm. There was increased in number of square crossed, reduction in period of immobility, increase in rearing behaviour and decrease in number of faecal pellets. In elevated plus – maze test, *O. sanctum* leaf extract also produced significant increase in number of entries and time spent in the open arma, with concomitant decrease in the number of entries and time spent in the closed arms (Table II).

DISCUSSION

Ancient Indian medical literature[1,2] describes that *O. sanctum* should be routinely used for physical fitness and to avoid various types of illness. Bhargava et al[6] have reported that animals treated with *O. sanctum* leaf extract showed significantly greater endurance. Restraint stress and chemically induced gastric ulcers were also prevented by *O. sanctum* leaf extract.

The present significant saxilytic activity in both plus – maze and open – field behaviour test models. The possible mechanism of anxilytic activity of *O. sanctum* leaf extract cannot be explained right now. *O. sanctum* leaf extract needs to be further evaluated for considering its therapeutic relevance as an anxiolytic agent. This preliminary report may serve as a footstep on this aspect.

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Table I

Effect of *O.sanctum* leaf extract on open-field behaviour test

Treatment	Dose (Mg/kg, po)	Squares crossed (number)	Immobility (Sec.)	Rearing (number)	Faecal pellets (number)
Propylene glycol (Control)	2 ml/kg	112.52 ± 8.76	40.52 ± 4.20	21.86 ± 3.16	14.40 ± 3.42
O.sanctum	200	154.64 ± 9.12*	29.17 ± 3.62*	36.64 ± 4.27*	6.18 ± 1.22*
Diazepam	1	161.92 ± 11.47*	17.62 ± 3.15**	37.15 ± 4.62*	5.16 ± 1.02*

Values are mean of six observation ± S.E.
*p<0.05; **p<0.01

Table II

Effect of *O.sanctum* leaf extract on plus-maze paradigm

Treatment	Dose (Mg/kg, po)	Number of entries		Time spent (Sec.)	
		Open arms	Closed arms	Open arms	Closed arms
Propylene glycol (Control)	2 ml/kg	4.12 ± 0.44	10.54 ± 1.62	42.00 ± 5.22	181.46 ± 11.85
O.sanctum	200	7.95 ± 1.07*	6.22 ± 1.63*	75.06 ± 6.15**	121.42 ± 9.65*
Diazepam	1	8.87 ± 0.82**	6.05 ± 1.21	82.14 ± 6.15***	103.17 ± 12.33*

Values are mean of six observation ± S.E.
*p<0.05; **p<0.01; ***p<0.001.

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