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RESEARCH ARTICLE

EFFECTS OF OCIMUM SANCTUM IN RELIEVING ANXIETY: AN EXPERIMENTAL STUDY.

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Abstract

It's almost impossible to live without some stress and anxiety. Stress has mostly negative effects on the health of an individual. Commonly used anxiolytics in practice are like Alprazolam or other benzodiazepines, have undesirable effects, like Abuse liability, dry mouth, tolerance, addiction, drowsiness, dyskinesia. Our objective was to test an alternate naturally available medicine. Plants like 'Ocimum Sanctum' (Tulsi, Holy Basil) are being tried for relieving stress, anxiety and do not possess the mentioned undesirable effects. Stress induces a variety of autonomic, visceral, immunological and neurobehavioral responses; such as anxiety, depression, anorexia and there is activation of the hypothalamic pituitary adrenal axis including elevated corticosterone levels. The present study was aimed at investigating the anti-anxiety effects of ocimum sanctum and compare it with diazepam in rats. Ocimum sanctum leaf extract was found to produce an effect indicative of anti-anxiety activity which was similar to those produced by low doses of barbiturates in other pharmacological studies. The effects were comparable to some earlier studies and showed anxiolytic effect second to diazepam. Despite multiple studies the effects of Ocimum Sanctum are not yet fully established.

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Introduction:-

Ocimum Sanctum is studied widely for its effects in rats and even human trials have been conducted. However conclusive evidence about anxiolytic effects and its extent is yet to be established. Anti stress effects of Ocimum Sanctum have been reported by some researchers^{1,2} and anxiety is precipitated by excess stress. Hence the study was planned with following aim and objectives.

Aim / Objective:-

The Aim of this study was to study the ameliorative effects on anxiety and performance in animal models of psychiatric disorders. Anxiety is one of the most prominent psychiatric disorders related to a common stress.

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The test used was performance in The Elevated Plus Maze (EPM) , which is a well- established and widely used animals model of Anxiety like behavior for rodents^{3,4}.

Materials and Methods:-

The study was carried out using Wistar Rats (200 ± 50 gm) 10 Rats per group. The effect of Ocimum Sanctum and Diazepam was evaluated for Anxiety by using Elevated Plus Maze (EPM) Test.

The study was conducted using EPM at baseline and post – treatment of aqueous extracts of Ocimum Sanctum (100 mg / kg.) and Diazepam (1.5 mg /kg) orally for 6 days.

Results:-

Elevated Plus Maze Test –

Analysis of EPM data revealed that the test in rats (3 hr. per day for 6 consecutive days) induced a significant reduction in percentage open arm entries by 50% and percentage time spent in open arms by 63% .

After treatment of aqueous extracts of Ocimum Sanctum (100 mg / kg.) and Diazepam (1.5 mg /kg) orally for 6 days, reversed the changes in both open arm entries and percentage time spent in open arms. Ocimum Sanctum increased the percentage number of open arms entries by 54% where as Diazepam 76% respectively.

Percentage time spent in open arms was also increased by 65 % with Ocimum Sanctum and 85% by Diazepam.

Discussion:-

The elevated plus maze is validated method for testing anxiolytic and anxiogenic potential of a drug. It is considered to be an etiologically valid animal model of anxiety. In the elevated plus maze, the open arms appear as more fear provoking than the closed arms for the animal. Hence the reduction in entry and time spent in open arms are the indications of the high level of fear or anxiety. Thus number of entries and time spent in the open arms have been found to be increased by anxiolytics and reduced by anxiogenic agents¹⁷. A significant increase in the time spent in open arms was observed after treatment with Ocimum Sanctum. In the Elevated Plus Maze Test increase in both, percentage number of entries and percentage time spent in open arms are indices of Anxiolytic activity and our results with aqueous extract of Ocimum Sanctum and Diazepam were consistent with anxiolytic effect of these drugs.

Many researchers working on Ocimum Sanctum like Bhattacharya et al⁵ , Nadkarni⁶ have postulated its potential to regulate HPA axis during stress. The chemical analysis of Ocimum Sanctum done by Satyavati et al⁷ , followed by Gunasegaran R et al⁸ has revealed presence of eugenol, nerol, terpenene4-01, alpha and beta pinene, camphor , carvacrol, luteolin etc. it is postulated that these ingredients are responsible for producing the cortisol sparing effect and free radical scavenger effect. This cortisol sparing immunomodulatory activity of Ocimum Sanctum may also contribute to the behavioral antianxiety activity.

In our study we observed a statistically significant increase in open arm entries as well as increase in time spent in open arm, indicating the anxiolytic action of O. Sanctum⁹. This effect however was lower than the effect produced by diazepam. This indicated the limited ability of O. Sanctum as an axiolytic and might help as a preventive or adjuvant in stressful conditions.

Our study has yielded results similar to results seen in imrana tabassum study¹⁰.A clinical trial using a combination containing O.Sanctum has also yielded encouraging results ; however in this trial it is difficult to elucidate the active component¹¹.

Conclusion:-

The Anti-Anxiety effect of Ocimum Sanctum is less than Diazepam but it has anti-anxiety effect which may be mediated by its central action. Some attribute it to central monoaminergic neurotransmitter system (5-HT and dopamine) modification^{1,2,5}. However the exact mechanism needs to be elucidated by using cell techniques. But Ocimum Sanctum can be considered as potential adjuvant anxiolytic or preventive modality for anxiogenesis.



Entry recording of a Rat in closed arm of EPM

Table 1:-General Details

Sr. No.	Groups	Open Arm entries %	Open Arm time spent
1	Control	20.2 ± 3.4	10.3 ± 3.6
2	Ocimum Sanctum	27.4 ± 2.0	18.4 ± 2.4
3	Diazepam	40.3 ± 3.6	32.4 ± 1.4

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