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Anti-Anxiety Activity of *Ficus religiosa* on Swiss Albino Mice

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ABSTRACT:

Objective: To perform anti-anxiety properties of methanolic extract of *Ficus religiosa* (leaf) on experimental models (elevated plus maze) in by using mice.

Materials and methods: Leaves of *Ficus religiosa* was collected, dried and crushed. The leaves were extracted with methanolic by using soxhlet method of extraction. After the extraction phytochemical screening were performed. The methanolic extract leaf of *Ficus religiosa* was studied at dual dosage level (250mg/kg and 500mg/kg, in p.o. administration) in mice by applying EPM model. The animals are shared into 4 sets and every group contain 6 mice. Group-I mice were managed using normal saline for 14 days. Group-II mice were managed by standard drug (Diazepam) 1mg/kg for 14 days. Group-III mice were managed by excerpt of *f. religiosa* at a dosage of 250mg/kg and Group-IV mice were managed with extract of *ficus religiosa* at a dosage 500mg/kg for 14 days. Antianxiety action of methanolic extract of *f. religiosa* was estimated by EPM model. In EPM and, aqueous extract of *f. religiosa* showed increased the % of time spent in open arm and % of open arm entries.

Results & Discussion: Phytochemical investigation of *f. religiosa* aqueous excerpt exposed the occurrence of alkaloids, flavonoids, amino acids, proteins, and carbohydrates. Administration of Diazepam (1mg/kg i.p.) produced a significantly decrease the anxiety behaviour when matched by control treated group. Admin of *f. religiosa* excerpt (250mg/kg & 500mg/kg) to mice significantly decrease the anxiety like behaviour when matched through Diazepam cured group and it was found that extract dose 500mg/kg show higher anxiolytic effect than 250mg/kg dose of excerpt of *ficus religiosa*.

Conclusion: Results suggest that leaves of *f. religiosa* possess significantly anti-anxiety activity.

KEYWORDS: *Ficus religiosa*, Diazepam, Antianxiety, EPM.

I. ANXIETY

Anxiety is a mental illness that throws off our everyday routines, including motivation and mood. Severe anxiety leads to mental illness and anxiety disorders, which are typically treated with synthetic drugs. Unease, discomfort, and worry or fear about a recognized threat are the hallmarks of anxiety, a negative emotional state. Anxiety is a typical occurrence in life. Treatment is necessary when it is excessive and out of proportion to the circumstances. Anxiety conditions are the utmost mutual mental health disorders. It shows itself as irregularities in our physiological activity, emotions, thoughts, and behavior. Acute stress condition, obsessive-compulsive condition, social anxiety, fear of heights, generalized anxiety disorder, particular phobia, panic attack condition, and post-traumatic stress disorder are a few kinds of anxiety conditions..[1] Anxiety has been associated for at least six months with impatience, restlessness, a tight or tense feeling, a tendency to get tired easily, difficulty focusing or losing focus, difficulty falling asleep, and irritation. [2] Anxiety is among the utmost communal mental and behavioral issues.

ANXIETY DISORDER



Figure no. 1. Anxiety condition

1.1. Causes of anxiety disorder:

1.1.1. Biological factors:

- Genetics
- Neurotransmitter disorder
- Disease
- Medications
- Dietary habits

1.1.2. Psychological factors:

- Behavioural features
- Poor self-worth
- Unfavourable feelings
- Perceptions of surroundings

1.1.3. Social factors:

- Bad circumstances in life,
- A lack of interaction with others
- Stress in the workplace
- A lack of social abilities
- Events of nature

1.2. Types of anxiety disorders:

1.2.1. Generalized Anxiety Disorder (GAD):

Unnecessary stress and worry over a variety of measures or actions that occur more often than not throughout a minimum of 6 months, along through the signs that go along with it (e.g., exhaustion, poor concentration).

1.2.2. Specific Phobia:

Pronounce and ongoing fear of things or circumstances that are easily identifiable (e.g., flying, heights, animals).

1.2.3. Post Traumatic Stress Disorder:

Anger in reaction to a harrowing event in which bodily damage happened or was in danger (such as war, or a natural disaster, child misuse, rape), flashbacks, or recurring frightening thoughts and recollections.

1.2.4. Social Phobia: Social anxiety condition is another name for it. An immediate anxiety reaction is nearly always triggered by social or performance settings. [3].

1.2.5. Obsessive-Compulsive Disorder Obsessions: Judgments, planning, urges, or pictures that are persistent, inappropriate, and create a great deal of concern or suffering.

1.2.6. Compulsions: Repetitive actions (like washing your hands, comparison, or testing) or mental processes that are triggered by rituals or obsessions.

1.2.7. Panic disorder: The existence of frequent, unplanned calm attacks, monitored via a major shift in manners linked to attacks, or near about 1 month of ongoing worry around having more attacks or implications of its repercussions. [4].

1.3. Signs and symptoms of the anxiety disorder:-

- Brains agitated
- Being certainly tired
- Headaches, muscle aches, stomach aches or unexplained pains
- Sweating
- Chest pain
- Being out of control
- Difficulty making eye contact to people they don't know
- Having sleep problems
- Trouble in controlling to feeling of worry
- Trouble in concentrating
- Racing heart.[5]

II. MATERIAL AND METHODS**2.1. Collection of plant materials:-**

Plant was picked for proposal view of its customary, phytochemical profile was assembled from herbal garden of R.K. Pharmacy College in Kashipur, Surai, Sathion, Azamgarh, Uttar Pradesh.

2.2. Authentication of plant:-

Section of Botany, Banaras Hindu University Varanasi, India, approved the plant was set at the herbarium of BHU Varanasi.

2.3. Requirements:-

Table No. 1: Requirements:-

Instruments	Chemicals	Drug
Digital pH meter, Soxhlet extractor	Mayer's, Wagner's, Shinoda	Diazepam
Heating mantle, Condenser	Hager's, Lead acetate	
Desiccator, Grinder	Biuret, Ninhydrin, Foam test	
EPM	Ferric chloride test	
	Keller-killiani test, Benedict test	
Syringe	Molisch's test reagents	
Oral cannula	Methanol Reagents and Distilled Water	

2.4. Preparation of extracts:-

Coarse Powdered (300g) leaf of plant was defatted with methanol (60-80° C), and then completely removed with methanol using soxhlet apparatus at 60°C for eight hour. Extract was sifted on whatman No. 1 filter paper. Solvent was completely removed under reduced pressure in a rotator vacuum evaporator to get a powdery mass. The concentrated extract was stored in vacuum desiccators for further use. ME was tried for anti-anxiety properties by quantity stages of 250 & 500 mg per kg orally. The results were matched by standard antianxiety agent diazepam (1mg/kg i.p.). All the test materials were suspended in vehicle (water)[6].

2.5. Experimental Animals:-

For this experiments utilize swiss albino mice balancing 25-30 gms. In polypropylene cages (38 x 23 x 10 cm) with paddy husk as bedding was arrangement for all rats treatment groups. Organization Temperature of 25±2°C, comparative humidity of 50±5 percent rats housed. Monitored light (12 h dim / 12 h sunny period). Fresh water ad libitum, fed using normal pellet nutrition allowed to all animals. The experiments was performed following animals ethics guidelines of "Institutional Animals Ethics Committee".

Table No. 2 Grouping of animals:

Sr. No.	Groups	No. of Animals
1	Normal Control normal saline) p.o.	6
2	Standard (Diazepam) 1 mg/kg i.p.	6
3	MEFR 250 mg/kg p.o.	6
4	MEFR 500 mg/kg p.o.	6

2.6. Elevated plus maze induced anxiety model:

The antianxiety activity of a methanolic excerpt of plant was studied in Swiss albino mice using an elevated plus-maze approach. The plus maze was shaped like a cross or plus, through double open (30 x 5 cm x 0.2 5 cm) and double closed (30 cm x 5 cm x 15 cm) arms stretching from center boards (5 cm x 5 cm) and rising to 50 cm beyond the ground. The whole maze was prepared of wood. Animals balancing 20-30 grams were put into 4 groups of every six.

Group-I is control administered only normal saline, group-II standard medication (Diazepam 1mg/kg) was given intraperitoneally ,group-III (Test-I) plant extract 250mg/kg and group-IV (Test-II) 500mg/kg orally was given. Standard i.p. was administered 30 minutes beforehand analysis, and extracts were administered p.o. 45 minutes prior to experiment. Animals were engaged individually in the epicenter of maze, facing an open arm, and number of entrances and time spent in closed and open arms were noted for a 5-minute remark period. Arm entrances were defined as all four paws entering in arm[7-8].

Group-I is control administered only normal saline.
Group-II standard medication (Diazepam 1mg/kg) was given i.p..
Group-III (Test-I) MEFR 250mg/kg.
Group-IV (Test-II) MEFR 500mg/kg orally was given
All treatment for given 14 days

2.8.. Statistical Analysis: Statistical Analysis: The results were presented as mean \pm SEM. The variances were matched utilizing one-way ANOVA and Dunnett's test.

III. RESULT

3.1. Phytochemical Screening:-

F. religiosa exposed the existence of triterpenoid, proteins and amino acids, alkaloids, flavonoids, and coumarin. In order to address the existence of various phenolic mixes, such as polyphenols, flavonoids, phenolic acid, etc.

Table No. 3: Preliminary phytochemical investigation.

Phytochemicals	Name of the test	Observation	Result
Alkaloids	Mayer's	Creamy white ppt.	+
	Wagner's	Deep chocolate ppt.	+
	Hager's	Yellow crystalline precipitate	+
Flavonoids	Shinoda	Development pink colour	+
	Specific	Orange to red	+
	Lead acetate	Yellow coloured	+
Proteins and Amino acids	Biuret	A pink coloured	+
	Millon's	A white precipitate develop	+
	Ninhydrin	No precipitate	-
Glycosides	General test	Yellow pigment	+
	Legal's test	Pink to red pigment	+
	Baljet test	No ppt	-
Triterpenoid	Salkowski's test	Develop Golden yellow layer	+
Tannins	Gelatin test	No precipitate	+
Steroid	Libermann-Burchard's test	No precipitate	-

3.2. Effect of *Ficus religiosa* leaf extract on Elevated Plus-maze Model:

The hydro-alcoholic excerpts of *Ficus religiosa* leaf at dosages of 250 mg/kg and 500 mg/kg p.o. completed well in EPM (Table 4). It significantly improved the number of entries and the time spent in the open arm. The potency of the anti-anxiety action is 500mg/kg p.o. The pharmacokinetics of methanolic excerpts of *Ficus religiosa* were comparable to diazepam 1 mg/kg i.p.

Table no. 4: Anxiolytic activity of methanolic extract of *Ficus religiosa* plant on mice epm test:

S. no.	Group	Treatment	Number of entries open arm (counts)	Number of entries closed arm (counts)	Time spent in open arm (s)	Time spent in closed arm (s)
1	Group-I	Control (normal saline)	5.33 \pm 0.42	14.23 \pm 0.55	66.5 \pm 0.56	229.2 \pm 0.46
2	Group-II	Diazepam(1mg/kg)	9.50 \pm 0.44*	6.23 \pm 0.22*	179.44 \pm 0.67*	116.10 \pm 0.47*
3	Group-III	MEFR(250mg/kg)	6.58 \pm 0.11ns	9.46 \pm 0.33*	92.11 \pm 0.60*	204.62 \pm 0.40*
4	Group-IV	MEFR(500mg/kg)	7.58 \pm 0.22b	8.23 \pm 0.44*	132.11 \pm 0.18*	161.71 \pm 28*

Values described as Mean \pm SEM (n=6). The data were examined via one-way ANOVA tracked via and Dunnett's test a-P <0.05, b- P<0.01, #- P<0.001; *- P<0.0001; ns- non significant when matched through control group.

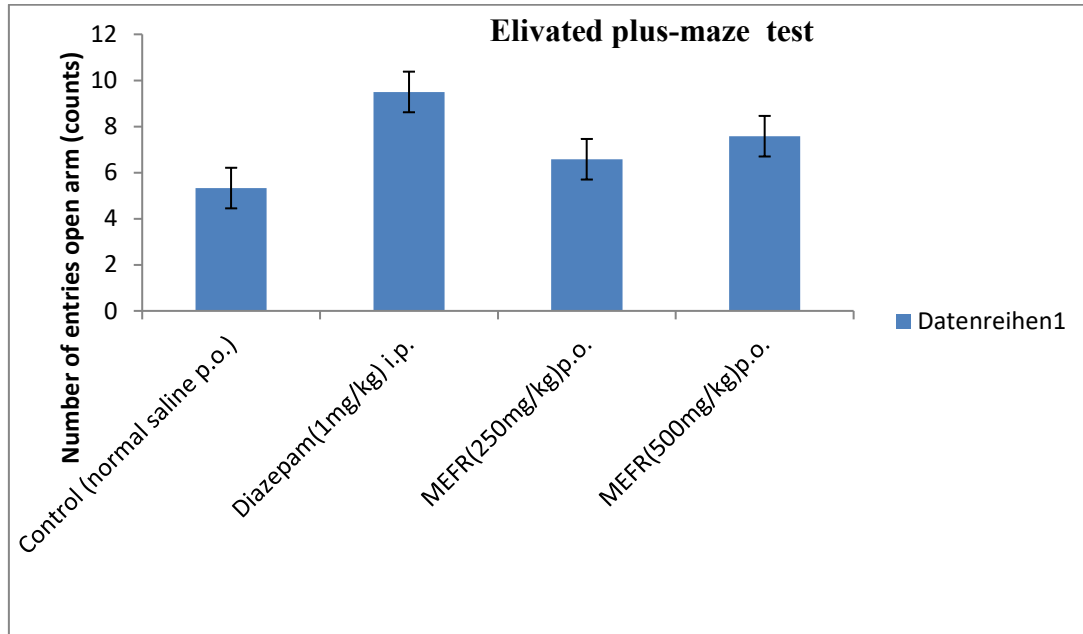


Figure no. 2. Result of EPM test of MEFR leaf Number of open arm entries (counts):

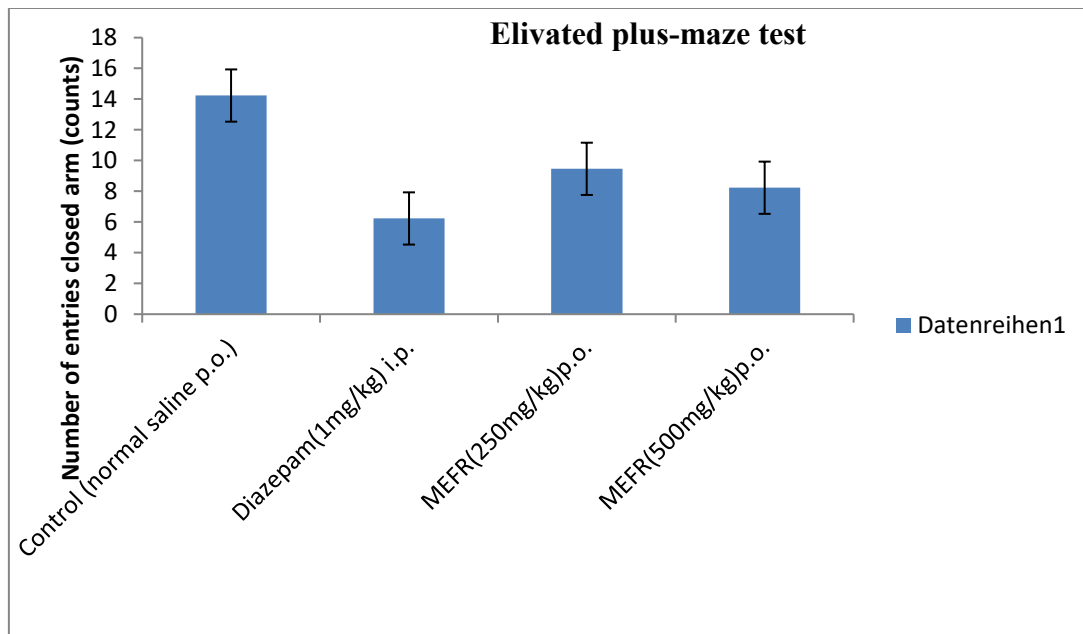


Figure no. 3. Result of EPM test of MEFR leaf Number of closed arm entries (counts):

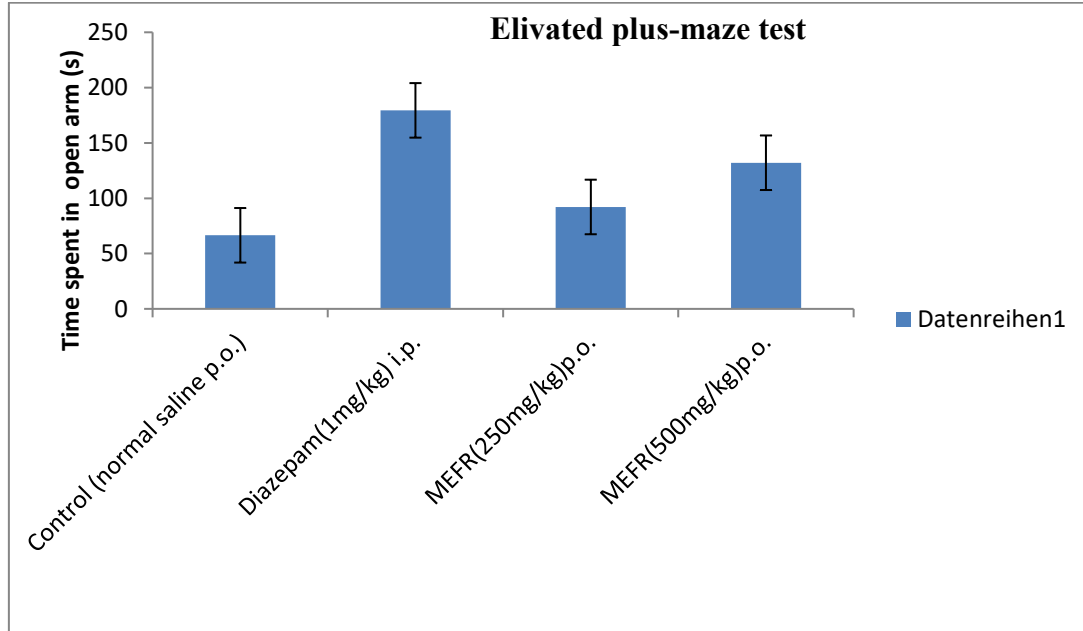


Figure no. 4. Result of EPM test of MEFR leaf time spent in open arm (s)

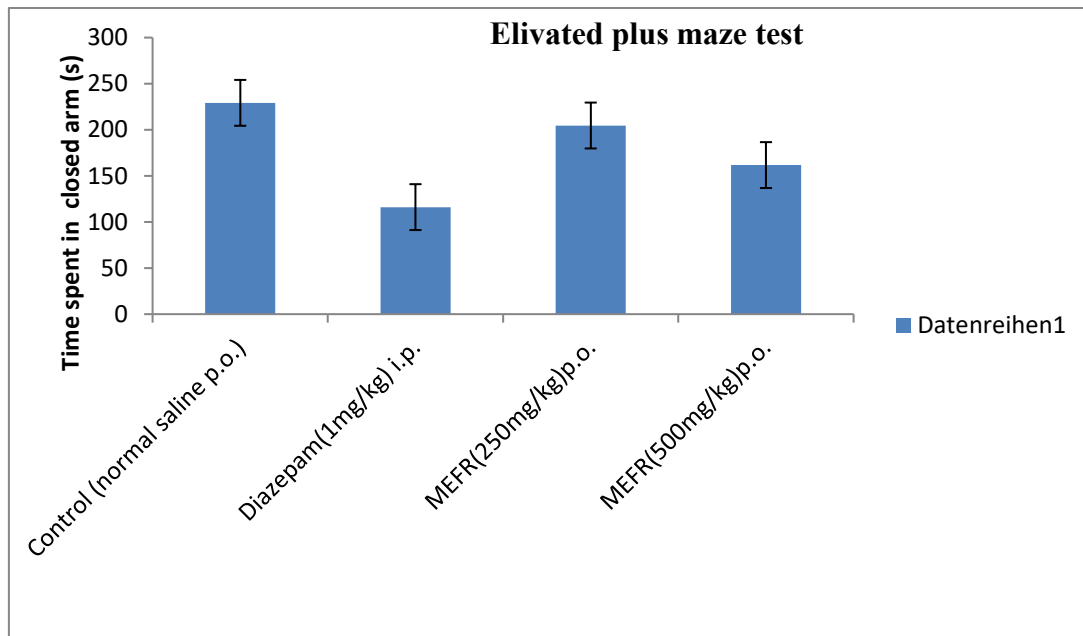


Figure no. 5. Result of EPM test of MEFR leaf time spent in closed arm (s)

IV. DISCUSSION

Here are not any reports of scientific assessment of *Ficus religiosa* leaves of antianxiety properties, although its historic usage for curing a variation of disorders. Alkaloids, flavonoids, proteins, and glycosides chemicals are all confirmed by the phytochemical screening. Mice were selected for the assessment of antianxiety action in experimental method since mice demonstrate robust anxiety-like behavior while showing to stressors (for example, novelty, intense light, or social

conflict). The elevated plus-maze models are utilized to examine mice's psychomotor and affective features.. However, the anxiolytic activity of the methanolic excerpt of *f.religiosa* leaves (250 and 500 mg/kg oral) was tested using EPM, which is recommended when the experiment agent rises open arm entries lacking changing the overall number of arm entries. Standard drug (diazepam) has long been used as a antianxiety, and it is as well commonly used in behavior pharmacology as a reference chemical for potentially antianxiety compounds. However, mice treated with 500 mg/kg body wt. of plant extract displayed a significant rise in the proportion of entries into open arms as well as time spent in the open arms of labyrinth. Statistical examination of records got since this trials stayed antianxiety action of plant excerpt as its influence displays significant rise in number of rises open arm entries as well as time spent in the open arms which shows its antianxiety properties.

V. CONCLUSION

Rendering to the findings, alcoholic extract of *Ficus religiosa* leaf had anti-anxiety properties. These findings suggest that the methanolic excerpt of *Ficus religiosa* leafs has a stronger anti-anxiety effect compared to control. Additionally, allopathic drugs employed in its therapy are linked to side effects that worsen human health. Researchers are now concentrating on herbal plants that have therapeutic properties as a result of this. These medicinal plants comprise a variety of phytochemicals, containing alkaloids, flavonoids, phenols, glycoside and others; these substances can be isolated and used to promote health. Consequently, the medicinal plants with anxiolytic effect that are not only secure but also reasonably priced are explored here.

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REFERENCES

- [1]. Chand, S. P., & Marwaha, R. (2022). Anxiety. In Stat Pearls. Stat Pearls Publishing. <http://www.ncbi.nlm.nih.gov/books/NBK470361/>
- [2]. Munir S, Gondal AZ, and Takov. V. (2019). Generalized anxiety disorder. <https://www.ncbi.nlm.nih.gov/books/NBK441870>
- [3]. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. 4th edition. Washington, DC: American Psychiatric Association, 1994.
- [4]. National Institute of Mental Health (NIMH). Treatment of Anxiety Disorders.2009
- [5].Kogan, C. S., Stein, D. J., Maj, M., First, M. B., Emmelkamp, P. M., & Reed, G. M. (2016). The classification of anxiety and fear-related disorders in the ICD-11. *Depression and Anxiety*, 33(12), 1141–1154.
- [6]. Mahmoudi souhila et al, “phenolic and flavonoid contents, antioxidant and antimicrobial activities of leaf extract from ficus carica”, Asian pacific journal of tropical biomedicine, 6(3); (2016): 239-245.
- [7]. Bourin M, Petit-Demoulière B, Dhonnchadha BN, Hascöet M. Animal models of anxiety in mice. *Fundam Clin Pharmacol* 2007;21:567-74
- [8]. Nishino T, Takeuchi T, Takechi K, Kamei C. Anxiolytic Effects by Hypnotics. *Journal of Pharmacological Sciences* 2008;107:349-54



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