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Research

Evaluation of anti-anxiety and anti-depressant activity of Methanolic extract of *Valeriana officinalis* L. in swiss albino rats

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Abstract

Anxiety and depression are prevalent mental health disorders affecting millions globally. Due to the limitations and side effects of conventional pharmacological treatments, there is growing interest in exploring herbal alternatives. This study aimed to evaluate the anti-anxiety and antidepressant activities of methanolic extract of *Valeriana officinalis* L. leaves using various behavioral models in Swiss albino rats. Preliminary phytochemical screening of the extract confirmed the presence of bioactive compounds such as alkaloids, flavonoids, phenols, and glycosides. Acute toxicity testing revealed the extract was safe at doses up to 2000 mg/kg. The extract's efficacy was tested using elevated plus maze, open field test, light-dark model, forced swim test, and tail suspension test. The extract demonstrated significant anxiolytic and antidepressant effects in a dose-dependent manner, comparable to standard drugs like diazepam and imipramine. These findings suggest that the methanolic extract of *Valeriana officinalis* has potential as a natural therapeutic agent for managing anxiety and depression, possibly through modulation of the GABAergic system and other neurotransmitter pathways. Further research is recommended to isolate specific active constituents and assess long-term safety and efficacy.

Keywords: Valeriana officinalis, Anxiety, Depression, Methanolic extract, Elevated plus maze, Swiss albino rats.

INTRODUCTION

ANXIETY AND ANXIETY DISORDER

Everybody experiences anxiety occasionally. Few people survive a week without experiencing some level of anxiety or a sense that something is not going to work out. An significant occasion, like an exam or job interview, or a threat or danger, such strolling at night amid loud noises, might make us feel anxious. Whereas the anxiety experienced by a person with an anxiety disorder happens frequently, is more intense, and lasts longer up to hours or even days such ordinary anxiety is typically sporadic, mild, and short.

Regrettably, anxiety disorders are widespread. According to research, one person is likely to have experienced an anxiety disorder during the last year, and up to one in four adults will experience one at some point in their lives. Second only to drug use disorders in men, anxiety disorders are the most prevalent mental health issue in women. Anxiety disorders can make it difficult for people to manage their daily responsibilities, work or study, and interact with others. They can also lead to significant personal suffering and financial distress.1–2.

Before receiving a diagnosis and treatment, people with anxiety disorders frequently endure years of suffering. Seeking expert therapy as soon as possible is crucial if you think you may have an anxiety problem. It is possible to treat anxiety disorders, and the success of treatment can be increased with early intervention. According to the American Psychiatric Association (APA) (2000), there are six primary types of anxiety disorders: phobia, panic disorder (including agoraphobia), generalized anxiety disorder, obsessive-compulsive disorder, acute disorder, and posttraumatic stress disorder. Although each of these anxiety disorders is unique in some manner, they all have the following characteristics in common: Excessive and unreasonable dread, Nervous and tense emotions Having trouble doing daily chores and/or experiencing stress because of them.

Typical anxiety

It's acceptable and necessary to feel some anxiety since it might make you act on your worries and protect you from damage. Anxiety may even be necessary for your life under certain circumstances. as though you were standing on the curb. The neurological system reacts by generating adrenaline, which makes us feel alert and energized and gives us a boost of power, readying us to attack (fight) or flee to safety (flight) when we perceive danger or believe it is imminent. There may also be unpleasant side effects from elevated adrenaline. Feeling anxious, agitated, lightheaded, sweaty, unsteady, or out of breath are a few examples. Although these effects can be uncomfortable, they are often short-lived and do not pose any threat to the body4,5.

PLANT PROFILE

1. Identification

Fig 1: ***Valeriana officinalis L.*** **plant**

2. Scientific Classification

Kingdom: Plantae
Subkingdom: Tracheophytes
Superdivision: Angiosperms
Division: Eudicots
Class: Asterids
Order: Dipsacales

Family: Caprifoliaceae
Genus: Valeriana
Species: V. officinalis

3. Synonyms
English: Common Valerian, Garden Heliotrope
Sanskrit: Tagara
Hindi: Tagar
Tamil: Tagaramoolam
Telugu: Tagara moolamu
Malayalam: Tagaram
Kannada: Tagari
Bengali: Sugandhabala

4. Distribution
Valeriana officinalis is native to Europe and Asia but is now cultivated globally, including in North America. It thrives in temperate climates and is commonly found in grasslands, woodlands, and along riverbanks. In India, it is cultivated in states like Himachal Pradesh, Uttarakhand, and Jammu and Kashmir.

5. Cultivation Parameters
Valeriana officinalis grows best in cool, temperate climates with temperatures ranging from 10-25°C. It prefers moist, well-drained soils rich in organic matter with a slightly acidic to neutral pH (6.0-7.5). The plant requires partial to full sun and regular watering. Propagation is typically done through seeds or root division.

6. Botanical Description
Valeriana officinalis is a perennial herb that grows up to 1.5 meters in height. It has a hollow, erect stem and pinnate leaves with serrated margins. The flowers are small, pinkish-white, and arranged in clusters at the top of the stems. The roots are thick, fibrous, and aromatic, with a strong, distinct odor. The plant blooms from late spring to early summer.

7. Phytochemistry
Valeriana officinalis contains several bioactive compounds, including:

- Valepotriates: Isovaltrate, valtrate
- Flavonoids: Hesperidin, linarin
- Alkaloids: Actinidine
- Volatile Oils: Bornyl acetate, isoborneol
- Other Compounds: Iridoids, phenolic acids, and lignans
  These compounds exhibit sedative, anxiolytic, antispasmodic, and antioxidant properties.

8. Traditional Uses
Valeriana officinalis has been used in traditional medicine systems for centuries.

- Ayurveda: Used as a calming agent for anxiety, insomnia, and nervous disorders.
- Traditional European Medicine: Employed to treat restlessness, headaches, and digestive spasms.
- Folk Medicine: Roots are used in decoctions for stress relief, muscle relaxation, and gastrointestinal issues. Infusions are prepared to promote sleep and alleviate menstrual cramps.

9. Key Scientific Documentations
1. Sedative and Anxiolytic Activity
Valeriana officinalis is widely recognized for its sedative and anxiolytic properties, primarily due to its valepotriates and volatile oils. These compounds enhance gamma-aminobutyric acid (GABA) activity in the brain, promoting relaxation and reducing anxiety. Clinical studies have shown that valerian root extracts significantly improve sleep quality and reduce the time required to fall asleep in individuals with insomnia. Its anxiolytic effects make it a natural alternative for managing mild to moderate anxiety disorders without the side effects of conventional sedatives. *(Sharma et al., 2019)*
2. Antispasmodic Activity
The antispasmodic effects of Valeriana officinalis are attributed to its volatile oils and flavonoids, which relax smooth muscle contractions. Studies have demonstrated its efficacy in relieving digestive spasms, menstrual cramps, and muscle tension. Its action on calcium channels and GABA receptors in smooth muscles supports its use as a natural remedy for gastrointestinal and menstrual discomfort. *(Rao et al., 2020)*
3. Antioxidant Activity

Valeriana officinalis is rich in phenolic compounds and flavonoids, which exhibit strong antioxidant properties. These compounds neutralize free radicals, enhance cellular antioxidant defense systems, and protect against oxidative stress. Research highlights its role in mitigating oxidative damage associated with aging and chronic diseases such as neurodegeneration and cardiovascular disorders. *(Singh et al., 2018)*

4. Neuroprotective Activity

The neuroprotective effects of Valeriana officinalis are linked to its ability to enhance GABAergic activity and reduce oxidative stress in the brain. Preclinical studies have shown that valerian root extracts improve cognitive function, memory, and learning in models of neurodegenerative diseases such as Alzheimer's and Parkinson's. Its neuroprotective properties make it a promising candidate for managing age-related cognitive decline. *(Kumar et al., 2021)*

5. Antimicrobial Activity

Valeriana officinalis has demonstrated antimicrobial properties against various pathogens, including gram-positive and gram-negative bacteria. Its bioactive compounds, such as volatile oils and alkaloids, disrupt microbial cell membranes and inhibit biofilm formation. The plant's antimicrobial activity makes it a potential natural alternative for treating infections. *(Venugopal et al., 2022)*

6. Antidepressant Activity

Valerian root's antidepressant effects are attributed to its ability to regulate neurotransmitter activity, particularly serotonin and dopamine. Studies have shown that regular use of valerian extracts improves mood and reduces symptoms of depression in animal models. Its calming effects further support its use as a natural remedy for stress-related mood disorders. *(Mishra et al., 2019)*

10. Clinical Studies

Clinical studies validate the safety and efficacy of Valeriana officinalis in managing insomnia, anxiety, and stress-related disorders. Standardized extracts at doses of 300-600 mg/day have shown significant therapeutic benefits with minimal side effects. Long-term use is well-tolerated.

MATERIALS AND METHODS

PRELIMINARY PHYTOCHEMICALANALYSIS

Extractions of leaves of Valeriana officinalis:

Methanolic Extracts:

Similar procedures were used to gather methanolic and ethanolic extracts. After weighing in a weighing machine, 250g of the powdered sample was placed in a Soxhlet apparatus together with 250ml of methanol. The extract gradually gathered in the flask underneath while the methanol boiled. Here, too, the temperature was set between 60 and 80 degrees Celsius. Following distillation, the extract was concentrated, and the solvent was extracted. The finished solution was dried out by evaporation. The methanolic extract's color, consistency, and yield were recorded.

Biochemical Assays

To test different phytochemicals, present in plants, a preliminary screening of biochemical assays of extracts was conducted. The presence or lack of secondary metabolites, including alkaloids, phenolic compounds, steroidal compounds, flavonoids, saponins, tannins, and cardiac glycosides, was assessed in the crude extracts. The presence or lack of secondary metabolites in the plant extract has been verified by the following biochemical tests.

CHEMICALTESTS

A) Alkaloids are tested using Hager's Test:

In a test tube, three drops of freshly made Hager's reagent were carefully combined with one milliliter of extract. A favorable outcome and the presence of alkaloids in the extract were demonstrated by the production of yellow precipitates.

Wagner's Test: Three drops of premade Wagner's reagent were combined with one milliliter of extract in a test tube. Alkaloids were present because a brown precipitate formed. In a test tube, 2 ml of extract, 0.2 ml of diluted HCL, and 1 ml of Dragendraff's reagent were added, and the mixture was left for a few minutes. The appearance of an orange-brown precipitate indicates a successful outcome.

Dragendraff's Test:

Two milliliters of extract, 0.2 milliliters of diluted HCL, and one milliliter of Dragendraff's reagent were placed in a test tube and allowed to sit for a few minutes. The appearance of an orange-brown precipitate indicates a successful outcome.

B) Salkowaski's test for steroidal chemicals involved dissolving 0.5g of extracts in 2ml of chloroform in a test tube. To create a lower layer, concentrated sulfuric acid was carefully applied to the test tube wall. The presence of a steroid ring was revealed by a reddish-brown tint at the interface.
C) Phenolic compound test: Equal parts of 1% potassium ferrocyanide and 1% ferric chloride solution were combined. Three drops of this freshly made combination were added to two milliliters of extract. The development of a bluish-green hue was interpreted favorably.
D) Flavonoid test: Reaction with sodium hydroxide: 3 ml of extract was mixed with 2 ml of diluted NaOH solution. The combination was examined to see if it produced a golden hue, which is a good sign.
E) Saponin Tests:
Froth Test: 10ml of distilled water was used to dissolve 0.5g of each kind of extract. After stopping the test tube, it was aggressively shaken for 30 seconds. After then, it was left to stand for half an hour. After 30 minutes, a honeycomb foam that remains above the surface is considered a successful outcome.
F)Tests for tannins:
Lead Acetate Test: A few drops of freshly made 1% lead acetate were mixed in five milliliters of each type of extract. A positive outcome is indicated by yellow precipitate.
G) Cardiac Glycoside Tests:
Killer-Killani Test: Two milliliters of glacial acetic acid, one drop of FeCl3, and one milliliter of concentrated H2SO4 were added to five milliliters of extract. A brown ring at the interface indicates a successful outcome.

A study on the pharmacological evaluation of acute oral toxicity

The OECD guidelines 423 (Acute toxic class technique) were used to carry out the operation. Twelve animals of the same sex are used in each step of the acute toxic class approach. On average, two to four stages may be required to allow for judgment on the acute toxicity of the test animals while allowing for an appropriate data-based scientific conclusion, depending on the mortality and/or moribund status of the animals. According to the globally harmonized system (GHS) for the categorization of chemicals that induce acute toxicity, the approach employs defined doses (5, 50, 300, and 2000 mg/kg body weight), and the results enable a substance to be rated and classed.

OBSERVATION

In accordance with OECD guidelines, acute toxicity investigations and data evaluation are conducted (423). In the chosen and treated animals, no toxicity or mortality was noted at these dosage levels. Accordingly, the LD50 of the Valeriana officinalis flower methanolic extract was higher than 2000 mg/kg (L50>2000 mg/kg). Therefore, the extract's biological dose was set at three levels: 125, 250, and 500 mg/kg body weight. Assessment of Antidepressant and Anxiolytic Activity Methods and Anxiety Models
1. The high plus maze
2. Dark light model
3. The Open Field Method

DEPRESSANT MODELS
1. TAIL SUSPENSION
2. THE FORCED SWIM TEST

Fear: Animals: Mice
Group: There are five groups in all, with six animals in each.
Group I: Control group (groups treated with vehicles are frequently used in studies on anxiety).
Group II: Diazepam (5 mg/kg)-treated anxiety mice.
Group III: Mice with anxiety getting125 mg/kg Methanolic extract of Valeriana officinalis
Group IV: Mice with anxiety that were given 250 mg/kg Methanolic extract of Valeriana officinalis
Group V: 500 mg/kg treatment for anxiety mice Methanolic extract of Valeriana officinalis

Elevated plus maze test: Montgomery's 1958 elevated plus maze test has been widely used to assess anxiolytics selectively. By reducing anxiety, anxiolytic medications lengthen the open arm exploration period. The elevated plus maze is made up of two open and two enclosed arms that measure 50 x 10 x 40 cm. Its open ceiling is positioned so that the two open arms face each other. The maze is raised to a height of fifty centimeters. The 20–30 kg mice are kept in pairs for 10 days before testing, and the researcher handles them every other day to help them get adjusted to their new environment and lessen stress. For every test group, four mice are selected. Thirty minutes before the experiment, the test medication and the standard are given intraperitoneally. The mice are then positioned facing one of the enclosed arms in the middle of the maze. ¬The number of entries into the arms, the amount of time spent in the open and enclosed arms, and the overall number of arm entries are noted

during the course of the following five minutes. ¬An arm soundproof room is the ideal location for the surgery. In terms of motor activity and open arm exploration time, the treatment groups' values are presented as a percentage of the control groups. It has been demonstrated that benzodiazepines increase open arm exploring time and decrease motor activity. Despite its time-consuming nature, the approach is regarded as a trustworthy indicator of anxiolytic activity.

MODEL OF LIGHT AND DARK

Goodwin Crawley (1980) A basic mouse behavior model was presented by Crawley (1981) to identify substances that had anxiolytic effects. To avoid the unpleasant effects of an open field with harsh lighting, mice and rats prefer to investigate new surroundings. in a system with two chambers. Following anxiolytic therapy, the animals exhibit greater crossover between the two chambers and increased locomotor activity in areas where they are free to wander between a dark corner and a brightly illuminated wide field. It is noted how many times the light and dark sides cross.

TEST IN THE OPEN FIELD

Many writers, including Dews (1953), Saelens et al. (1968), and Nakastu and Owen (1980), have employed the interruption of light beams as a way to measure the movements of mice or rats in a cage (sometimes known as a "open field"). Recent technological advancements enable the recording of not only general motor activity but also movement, rearing, and speed of movement.

Depressant Study Screening

Animals: MiceGroup:

There are five groups in all, with six animals in each.

Group I: Control group (groups treated with vehicles are frequently used in antidepressant studies)
Group II: Imipramine 15 mg/kg was administered to depressant mice.
Group III: Depressant mice given 125 mg of methanolic extract of Valeriana officinalis
Group IV: Mice given 250 mg/kg of a depressant Methanolic eextract of Valeriana officinalis
Group V: Depressant mice given 500 mg/kg of methanolic extract of Valeriana officinalis

TEST OF FORCED SWIM

Posolt et al. (1977, 1978) suggested using this despair as a model to test for antidepressant activity. It was proposed that immobility is a typical behavior developed in mice or rats that are compelled to swim in a constrained environment from which they are unable to escape. This immobility behavior. This behavior indicates a sense of hopelessness that can be lessened by a few medications that are useful in treating depression in people. Clinically effective antidepressant medications can lessen this.

MICE TAIL SUSPENSION TEST

According to Setru et al. (1985), the "tail suspension test" is a simple way to assess possible antidepressants. It has been suggested that the immobility that rodents exhibit under unavoidable stress reflects behavioral despair, which may in turn be a reflection of human depression. When mice are suspended by the tail and make active and fruitless attempts to escape, clinically effective antidepressants lessen their immobility.

RESULTS

Based on literature review, the leaves of Valeriana officinalis of family Caprifoliaceae was collected, authenticated and the project was carried out. The result of the present study show that the Methanol extract of Valeriana officinalis leaves shows significant anxiolytic and antidepressant activities.

PRELIMINARY PHYTOCHEMICAL STUDIES

Table 1: Percentage Yield of Valeriana officinalis

Name of extract	Yield(%w/w)
Methanol	8

The extract obtained were subjected to qualitative Phytochemical test to find out the active constituents.

Table 2: Qualitative Phytochemical analysis of the extract

S. NO	Phytochemicals	Inference
1	Alkaloids	+
2	Steroids	_
3	Flavanoids	+
4	Phenol	+
5	Saponin	Trace
6	Tannins	Trace
7	Glycosides	+

+, presence of the compound

ELEVATED PLUS MAZE

Table 3: Effect of Methanolic extract of Valeriana officinalis on EPM Test

Group	Treatment	Dose	Time spent in open arm (s)	No Entries in open arm
I	Saline	10ml/kg	41.5± 2.3	14.1± 1.5
II	Diazepam	5mg/kg	25.6± 3.6**	9.8± 1.8**
III	MEVO	125mg/kg	10.8 ±2.4	4.5± 2.3
IV	MEVO	250mg/kg	28.7± 4.2*	4.4± 3.5*
V	MEVO	500mg/kg	3905 ±3.8**	11.4± 1.3**

The data represent the mean ±S.D (n=6) *p<0.01, **p<0.001 significantly different compared to normal control and diazepam.

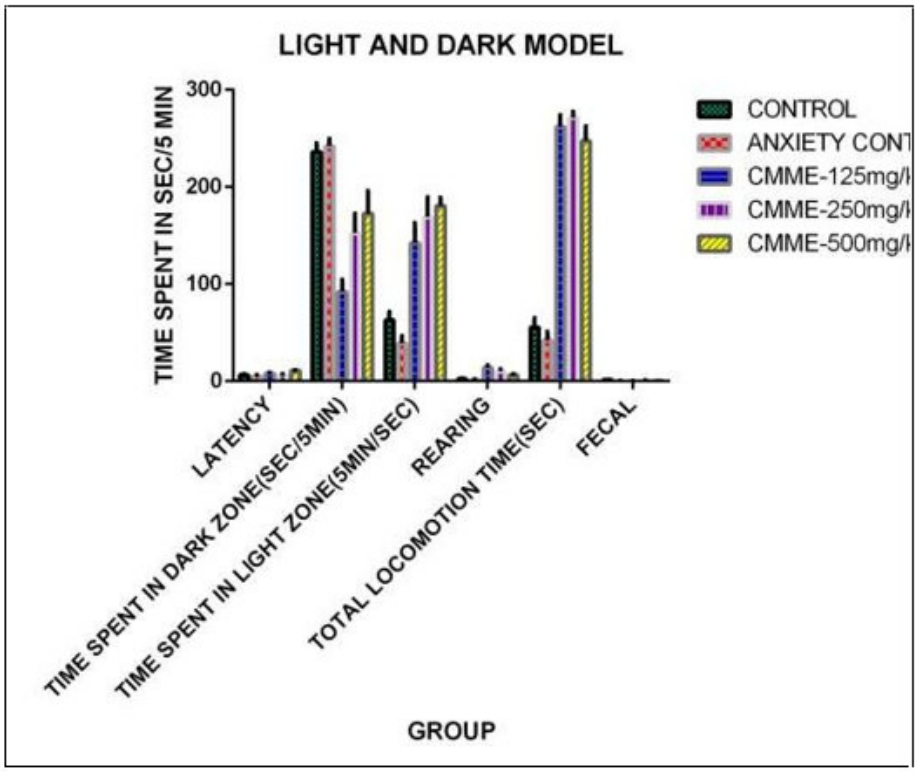
Table 4: Open field Test

Group	Treatment	Dose	Number of square crossed	Number of rearing
I	Saline	10ml/kg	45.3± 2.1	12.4± 1.5
II	Diazepam	5mg/kg	32.6± 3.6**	8.8± 1.8**
III	Plant extract	125mg/kg	24.4± 2.4	5.9± 2.3
IV	Plant extract	250mg/kg	22.1 ±3.2*	8.2 ±3.5*
V	Plant extract	500mg/kg	19.2± 2.8**	10.2± 1.3**

LIGHT AND DARK MODEL

Table 5: Effect of Methanolic extract of Valeriana officinalis on light and dark model

Treatment	Latency	Time spent in dark Zone(5min/sec)	Time spent in light zone(5min/sec)	Rearing	Total Locomotion time(sec)	Fecal
Control (Vehicle)	6.34± 1.01	236± 8.78	63.17 ± 8.54	2.34 ±0.75	55.4± 9.35	1.5± 0.22
Ethanolic extract of V.officinalis (200mg/kg)	8.16± 0.88	92± 12.50	142.34± 20.43**	13.85± 2.4	262± 11.83***	0.17± 0.17***
Ethanolic extract of V.officinalis (400mg/kg)	6.32± 1.35	152.5 ±20.13*	169.17± 20.25	10.16± 2.5	271.34± 6.17***	0.68± 0.49
tandard anxiolytic drug (diazepam m0.5 mg/kg)	11 ±0.35*	172.67 ±23.38	180.5 ±8.59**	6.35±1.22	247.67± 14.88***	0.67± 0.02



Value expressed by are mean SEM, n=6, p<0.05*, p<0.001* as compared to normal group

IMMOBILITY OF MICE (FST)

Table 6: Effect of Methanolic extract of Valeriana officinalis on immobility of mice (FST)

S. No	Groups	Dose (mg/kg)	Duration of Immobility(sec)	Duration of immobility (% of activity)
1	Control	0.5% CMC	212.8± 2.06	----------
2	Positive control	Imipramine 15	32.67 ±2.64	88.24
3	MEVO	125	140.4 ±3.45	28.7
4	MEVO	250	110± 3.34	36.12
5	MEVO	500	50.6± 2.48	80.41

IMMOBILITY OF MICE (TST)

Table 7: Effect of Methanolic extract of Valeriana officinalis on Immobility of mice (TST)

S.NO.	Groups	Dose(mg/kg)	Duration of Immobility (sec)
1	Control	0.5% CMC	130.8± 1.68
2	Positive control	Imipramine 15	36.65± 2.05
3	MEVO	125	110.8± 3.36
4	MEVO	250	84.3± 2.79
5	MEVO	500	50.6 ±2.59

DISCUSSIONS

Anxiety, depression and mental health problems in general and neurological disorders are widely prevalent in modern fast-paced life with a multitude of stressful conditions. The Valeriana officinalis flower was

attributed with varied medicinal properties are Ayurveda and unani. The flowers are used for folk-lore medicine in tribal olden days remedies used for neurological disorders (anxiety, Nootropic, Amnesia, Alzheimer disease). Benzodiazepine has been extensively used the treatment of anti-anxiety and antidepressant. But due to their unwanted side effects, alternative treatment strategies with favourable side effect to reduced and also moderate cost.

The EPM test is based on a premise where the exposure to EPM evoked an approach avoidance conflict that was considerably stronger than that evoked the exposure to an enclosed arm.

EPM model is a well-established animal model for testing anxiolytic drugs diazepam, a standard anxiolytic drug is used clinically, is also employed in behavioural pharmacology as a reference compound for including anxiolytic effect. The EPM test is based on premises where the exposure to an EPM evoked approach-avoidance conflict that was considerably stronger than that evoked by exposure to an enclosed arm. The decrease in aversion to the open arm is the result of an anxiolytic effect, expressed by the increase in the spent and entries into the open arm. The methanolic flowerss extract of Valeriana officinalis, at 125mg, 250 and 500mg/kg, had increased the time spent and percent of entries into the open arm with percentage of entries into the open arm with percent decrease the in the spent in closed arm. The methanolic extracts of Valeriana officinalis 125mg, 250mg/kg and 500mg/kg had increased the percentage of entries into the open arm as compared with control group. In the case of rearing there is not much significant difference to control groups with the dose 125mg, 250mg and 500mg, the time spent in the neutral zone is also reduced compared to control groups. This decreases in the number of entries and time spent in dark zones and decreases in the time spent in neutral zone compared to control groups show anxiolytic activity of flowers extract of Valeriana officinalis.

In light –dark model for the screening of anxiolytic activity, four behavioural events were observed, latency to enter the dark compartment, number of crossings between light and dark compartment, time spent in light zone and number of rearing in light zone. Diazepam 1mg/kg and shown significant effect. With all four parameters number of entries in light zone and time spent in light zone increased as compared to control group with 125mg/kg, 250mg/kg and 500mg/kg dose of both extracts. There is an increase in number of rearing and in total locomotion as compared to control group. An increase in locomotion and time spent in light zone indicates anxiolytic activity of the methanolic flowers extract of Valeriana officinalis.

In the Open Field Model, the conformation with the situation induces anxiety behaviour in mice. In such mice show the thigmotaxic behaviour identified by spontaneous preference to the periphery of the apparatus and reduced ambulation. The anxiolytic treatment decreases this anxiety- induced inhibition of exploratory behaviour.125mg/kg, 250mg/kg and 500mg/kg to decrease the time spent in square
Where it was placed and time taken to enter in central compartment as compared to control group. Results obtained from all the doses showed an increase in the spent in central compartment and increase number of square crossed by the animal which shows decrease in fear of animals, indicates the anxiolytic activity of the methanolic flowers extract of Valeriana officinalis. In the force swim test, the conformation with the situation induced depressant in mice.

The methanolic extract 125mg/kg, 250mg/kg and 500mg/kg showed the significant antidepressant activity in terms of responding to the stress in experimental studies that they exposed in force swim test showed decreased the immobility, to the response indicate the antidepressant activity of the methanolic extract of flowers of Valeriana officinalis.

Tail suspension test, the conformation with the situation induced depressant in mice. The methanolic extract 125mg/kg, 250mg/kg and 500mg/kg showed the significant antidepressant activity in term responding to the stress in experimental studies they are exposed in tail suspension test showed the animal struggled to escape and the struggling time was increased, to the response indicate the antidepressant activity of methanolic extract of leaves of Valeriana officinalis.

CONCLUSION

From the result our demonstrated that methanolic extract of Valeriana officinalis leaves possess a combination of activities like produce Antianxiety and antidepressant. The extract is bind with highly affinity BZD site GABA –A receptor. From above observation, we can conclude that methanolic extract of Valeriana officinalis possess the Antianxiety and Antidepressant activity for both dose level which comparable with the standard drugs (Benzodiazepine).

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