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REVIEW ON ANXIOLYTIC ACTIVITY OF MEDICINAL PLANT

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ABSTRACT

Eighty percent of people on the planet will utilize traditional medication made from medicinal plants. This review's main goal is to highlight herbal medications that can be utilized to treat anxiety disorders. 970 million individuals worldwide, or 1 in every 8 persons, suffered from a mental illness in 2019. Anxiety and depressive disorders were the most prevalent types. Due in large part to the COVID-19 epidemic, the number of individuals suffering from anxiety and depression illnesses increased dramatically in 2020. According to preliminary estimates, anxiety will increase by 26% respectively, in just one year. For thousands of years, traditional medicine has employed several plants to treat anxiety. The use of herbal supplements to treat anxiety problems is getting more common, and more individuals are learning about how various herbal treatments function. Herbs are less likely to have undesired side effects and are safer, less expensive, and more effective than pharmaceutical drugs. Herbs are the most effective alternatives to pharmaceutical drugs for a wide range of medical conditions. Many medicinal plants have been demonstrated to have anti-anxiety qualities, such as *Abies pindrow, Albizzia lebbeck, Angelica archangelica Linn, Brassica oleracea, Centratherum Anthelminiticum, Coriandrum sativum Cynodon dactylon Cyanthillium cinereum (L.), Drypetes roxburghii Dysphania Ambrosioides, Euphorbia Hirta Glorisa superba linn, Hypericum perforatum, Lawsonia inermis linn, Mimisa pudica L, Moringa oleifera, Nymphaea alba linn, Ocimum Sanctum, Plectranthus amboinicus Pongamia pinnata, Rubia cordifolia, Scoparia dulcis linn, Stachys tibetica vatke Vitex negundo linn Withania somnifera (l).*

KEYWORDS: Anxiety, Anti-anxiety, Medicinal Plants, Central Nervous System.

1. INTRODUCTION

Anxiety disorders are marked by excessive dread and worry, as well as associated behavioral changes. Symptoms are severe enough to cause significant anguish or difficulty in functioning. In the community anxiety is the most common disorder and very common in secondary medical health care system.[1] There are several types of anxiety disorders, including generalized anxiety disorder (characterized by excessive worry), panic disorder (characterized by panic attacks), social anxiety disorder (characterized by excessive fear and worry in social situations), separation anxiety disorder (characterized by excessive fear or anxiety about separation from those with whom the person has a strong emotional bond), and others. According to large population-based surveys, up to 33.7% of the population are affected by an anxiety disorder during their lifetime.[2] Effective psychological treatment is available, and depending on the age and severity, medication may be used.

2. ETIOLOGY

Anxiety disorders appear to be caused by an interaction of biopsychosocial factors. Genetic vulnerability interacts with situations that are stressful or traumatic to produce clinically significant syndromes.[3]

Anxiety can be caused by the following conditions

- Medications
- Herbal medications
- Substance abuse
- Trauma
- Childhood experiences
- Panic disorders.

3. EPIDEMIOLOGY

Anxiety is one of the most common psychiatric disorders in the general population. Specific phobia is the most common with a 12-month prevalence rate of 12.1%. Social anxiety disorder is the next most common, with a 12-month prevalence rate of 7.4%. The least common anxiety disorder is agoraphobia with a 12-month prevalence rate of 2.5%. Anxiety disorders occur more frequently in females than in males with an approximate 2:1 ratio.[4]

4. SIGN & SYMPTOMS

In 1621, Robert Burton described the symptoms of anxiety attacks in socially anxious people in his book *The Anatomy of Melancholy*.[5]

Cognitive symptoms: Fear of losing control; fear of physical injury or death; fear of "going crazy"; fear of negative evaluation by others; frightening thoughts, mental images, or memories; perception of unreality or detachment; poor concentration, confusion, distractible; narrowing of attention, hypervigilance for threat; poor memory; and difficulty speaking.

Physiological symptoms: Increased heart rate, palpitations; shortness of breath, rapid breathing; chest pain or pressure; choking sensation; dizzy, light-headed; sweaty, hot flashes, chills; nausea, upset stomach, diarrhea; trembling, shaking; tingling or numbness in arms and legs; weakness, unsteadiness, faintness; tense muscles, rigidity; and dry mouth.

Behavioral symptoms: Avoidance of threat cues or situations; escape, flight; pursuit of safety, reassurance; restlessness, agitation, pacing; hyperventilation; freezing, motionless; and difficulty speaking.

Affective symptoms: Nervous, tense, wound up; frightened, fearful, terrified; edgy, jumpy, jittery; and impatient, frustrated.[3]

5. TYPES OF ANXIETY DISORDER[3]

The Diagnostic and Statistical Manual of Mental Disorders (DSM–5; 2013) classifies anxiety disorders in following categories.

5.1 Separation Anxiety Disorder: An individual with separation anxiety disorder displays anxiety and fear atypical for his/her age and development level of separation from attachment figures. There is persistent and excessive fear or anxiety about harm to, loss of, or separation from attachment figures. The symptoms include nightmares and physical symptoms. Although the symptoms develop in childhood, they can be expressed throughout adulthood as well.

5.2 Selective Mutism: This disorder is characterized by a consistent failure to speak in social situations where there is an expectation to speak even though the individual speaks in other circumstances, can speak, and comprehends the spoken language. The disorder is more likely to be seen in young children than in adolescents and adults.

5.3 Specific Phobia: Individuals with specific phobias are fearful or anxious about specific objects or situations which they avoid or endure with intense fear or anxiety. The fear, anxiety, and avoidance are almost always immediate and tend to be persistently out of proportion to the actual danger posed by the specific object or situation. There are different types of phobias: animal, blood-injection-injury, and situational.

5.4 Social Anxiety Disorder: This disorder is characterized by marked or intense fear or anxiety of social situations in which one could be the subject of scrutiny. The individual fears that he/she will be negatively evaluated in such circumstances. He/she also fears being embarrassed, rejected, and humiliated or offending others. These situations always provoke fear or anxiety and are avoided or endured with intense fear and anxiety.

5.5 Panic Disorder: Individuals with this disorder experience recurrent, unexpected panic attacks and experience persistent concern and worry about having another panic attack. They also have changes in their behavior linked to panic attacks which are maladaptive, such as avoidance of activities and situations to prevent the occurrence of panic attacks. Panic attacks are abrupt surges of intense fear or extreme discomfort that reach a peak within minutes, accompanied by physical and cognitive symptoms such as palpitations, sweating, shortness of breath, fear of going crazy, or fear of dying. Panic attacks can occur unexpectedly with no obvious trigger, or they may be expected, such as in response to a feared object or situation.

5.6 Agoraphobia: Individuals with this disorder are fearful and anxious in two or more of the following circumstances: using public transportation, being in open spaces, being in enclosed spaces like shops and theaters, standing in line or being in a crowd, or being outside of the home alone. The individual fears and avoids these situations because he/she is concerned that escape may be difficult or help may not be available in the event of panic-like symptoms, or other incapacitating or embarrassing symptoms (e.g., falling or incontinence).

5.7 Generalized Anxiety Disorder: The key feature of this disorder is persistent and excessive worry about various domains, including work and school performance that the individual finds hard to control. The person also may experience feeling restless, keyed up, or on edge; being easily fatigued; difficulty concentrating or mind going blank; irritability, muscle tension, and sleep disturbance.

5.8 Substance/Medication-Induced Anxiety Disorder: This disorder involves anxiety symptoms due to substance intoxication or withdrawal or to medical treatment.

5.9 Anxiety Disorder Due to Other Medical Conditions: Anxiety symptoms are the physiological consequence of another medical condition. Examples include endocrine disease: hypothyroidism, hypoglycemia, and hypercortisolism; cardiovascular disorders: congestive heart failure, arrhythmia, and pulmonary embolism; respiratory illness: asthma and pneumonia; metabolic disturbances: B12 or porphyria; neurological illnesses: neoplasms, encephalitis, and seizure disorder.

6. EVALUATION

When the history and examination do not suggest the symptoms as arising from any other medical disorder, the initial laboratory studies may be limited to the following: complete blood cell count (CBC) chemistry profile, thyroid function tests, urinalysis, and urine drug screen.[6,7,8]

If the anxiety symptoms are atypical or there are some abnormalities noted in the physical examination more detailed evaluations may be indicated to identify or exclude underlying medical conditions. This would include the following: electroencephalography, brain computed tomography (CT) scan, electrocardiography, tests for infection, arterial blood gas analysis, chest radiography, and thyroid function tests.[3]

7. MECHANISM OF ACTION OF HERBAL MEDCATION

The mechanism of action of herbal drugs mainly involves modulation of neuronal communication via specific plants metabolites binding to neurotransmitter/neuromodulator receptors and via alteration of neurotransmitter synthesis and general function.[9]

8. TREATMENT OF ANXIETY

Anxiety can be treated with the psychological counseling, medically or independently. The treatment depends on the cause of the anxiety and the patient's preferences. Often treatments will consist of a combination of psychotherapy, behavioral therapy and medications. Sometimes alcoholism, depression, or other coexisting conditions have such a strong effect on the individual that treating the anxiety disorder must wait until the coexisting conditions are brought under control.[10]

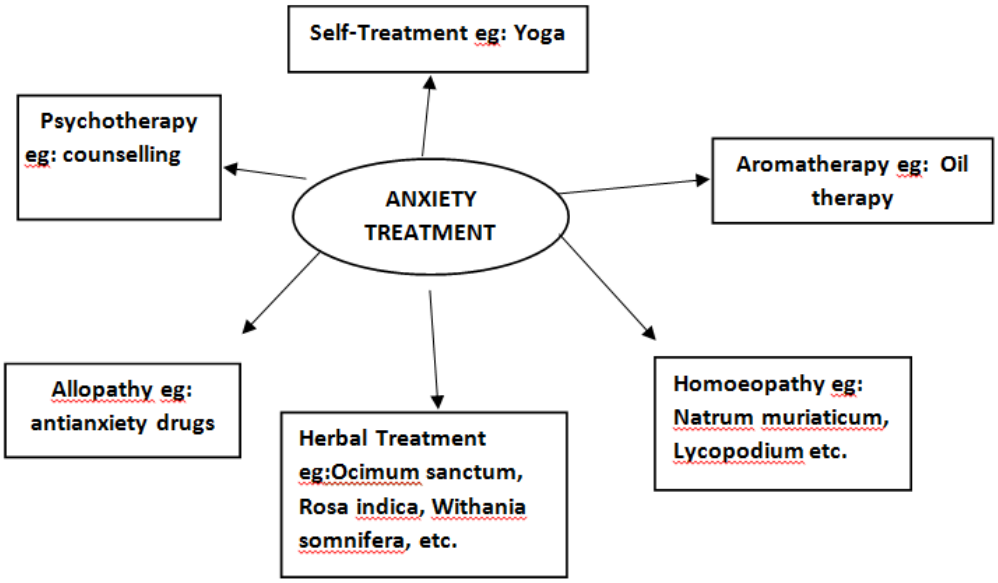

Fig: Various Treatments of Anxiety Disorder.

9. INDIAN PLANTS PROVED TO RETAIN ANXIOLYTIC ACTIVITY

9.1 Abies pindrow Royle (Family-Pinaceae)

Properly identified *A. pindrow* aerial parts were extracted sequentially and exhaustively utilizing solvents in increasing order of polarity, namely n-hexane, chloroform, methanol, and water. All crude extracts were tested in EPM for antianxiety activity in mice at dosages of 100, 200, or 400 mg/kg p.o. The efficacy of *A. pindrow* was compared statistically to the usual anxiolytic medication, diazepam (2 mg/kg, i.p.). Among the various extracts, chloroform and methanol extracts shown considerable antianxiety efficacy compared to the control and were statistically equal to the standard medicine at doses of 200 and 400 mg/kg, respectively.[11]

9.2 Albizzia lebbeck (Siras) (Family-Mimosaceae)

Albizzia lebbeck (Linn.) Benth. Is a medium- to large-sized tree found across India. The effect of a saponin-containing n-butanolic fraction (BF) isolated from dried *Albizzia lebbeck* leaves on cognitive behaviour and anxiety was investigated in albino mice. The anxiolytic activity of BF (0, 10, 25, and 50 mg/kg) was determined by measuring its influence on the length of occupancy in the closed arm. Animals administered BF (25 mg/kg) spent more time in the open arm in a dose-dependent manner in EPM.[12]

9.3 Angelica archangelica Linn (Family –Amaranthaceae)

The aqueous extract of *A. archangelica* was tested for anxiolytic action and found to have a substantial potential. *Angelica archangelica Linn*'s methanol extract of root, stem, leaf, fruit, and whole plant has anxiolytic action. All of the extracts (MER, MES, MEL, MEF, and MEW) were tested for anxiolytic effects in rats using the elevated plus maze (EPM) model. Diazepam led to higher percentages of time spent and arm entries in open arms (*P < 0.05, **P < 0.01).In EPM, the whole plant and leaf had the highest anxiolytic action, followed by the root and fruit, while the stem had the lowest (**P < 0.01).[13]

9.4 Brassica oleracea (Family-Brassicaceae)

The edible green vegetable plant in question is a member of the *Brassicaceae* family, whose edible flower heads are consumed like vegetables. The investigation's findings indicate that, following acute dosing, a 200 mg/kg dose of *Brassica oleracea* hydro-alcoholic extract demonstrates considerable anxiolytic activity in EPM. The extract of petroleum ether had no anti-anxiety properties. To identify the bioactive component causing the activity, more research is being done.[14]

9.5 Centratherum Anthelminiticum (Family- Asteraceae)

The herbal plant known as kalijiri (*Centratherum Anthelminticum*, Family: *Asteraceae*) has been extensively employed in Indian traditional medicine to cure a variety of illnesses. Mice sensitive to therapeutically effective anti-anxiety substances were used to assess the effects of a methanolic extract of *Centratherum Anthelminticum* seeds. Compared to the conventional medication, the extract (100 and 200 mg/kg) given intraperitoneally was able to demonstrate a noteworthy impact on anxiety in EPM.[15]

9.6 *Coriandrum sativum (Family- Umbelliferae)*

Using several animal models of anxiety in mice, including the elevated plus maze, open field test, light and dark test, and social interaction test, the hydro alcoholic extract of *Coriandrum sativum (Linn.)* was found to have anti-anxiety properties. According to OECD rules, the dose of *C. sativum* fruit hydro alcoholic extract (50, 100, and 200 mg/kg) was chosen, with 0.5 mg/kg serving as the benchmark. The anti-anxiety effects of *C. sativum* extract at doses of 100 and 200 mg/kg were nearly identical to those of diazepam.[16]

9.7 *Cynodon dactylon (Family- poaceae)*

Cyndon dactylon linn extract (200 mg/kg and 400 mg/kg P.O.) showed anti-anxiety effects on male mice. A separate solvent was used for the extraction, which was done using a Soxhlet equipment. The elevated plus maze test was used to measure the anti-anxiety activity, and the results were compared to those of the standard medication and control. In comparison to the control group, extract (200 mg/kg and 400 mg/kg) demonstrated a dose-dependent increase in the amount of time and entries into the open arm in the elevated plus maze. Without impairing motor coordination, the alcoholic extract of *Cyndon dactylon* significantly facilitates anti-anxiety effects.[17]

9.8 *Cyanthillium cinereum (L.) (Family- Asteraceae)*

Mice treated with a methanolic extract of *Cyanthillium cinereum (L.)* H. Rob showed any anti-anxiety benefits. Methanolic extract's antianxiety activity was assessed, and the results showed that it significantly ($p<0.0001$) increased the effects of diazepam (2 mg/kg) and plant extract (400 mg/kg) when compared to plant extract (100 mg/kg) and plant extract (200 mg/kg) when data were compared with the control group. *C. cinereum* methanolic extract exhibited antianxiety properties in EPM.[18]

9.9 *Drypetes roxburghii (Family-Euphorbiaceae)*

Swiss Albino Mice were used to test the anti-anxiety effects of an ethanol and water extract of the leaf of the *Drypetes roxburghii* plant at a dose of 500 mg/kg body weight. Using the light and dark model and elevated plus maze techniques, anti-anxiety activity was measured. In test mice, both extracts show anxiolytic properties. But compared to the aqueous extract, the ethanolic extract exhibited more potent anxiolytic action. *Drypetes*'s anti-anxiety effects were measured using the light-dark and raised plus maze models. Diazepam was used as the typical benchmark medication.[19]

9.10 *Dysphania Ambrosioides (Family- Amaranthaceae)*

Dysphania ambrosioides leaf, given orally to Swiss Albino mice, has anxiolytic properties. The anxiolytic action of the plant in mice is assessed for the study using four behavioral animal test models: the Elevated Plus Maze (EPM), Open Field Test (OFT), Light and Dark Test (LDT), and Hole Board Test (HBT). For the anxiolytic investigation, animals were split into four groups (n = 6), with the reference medication being diazepam 2 mg/kg and the test medicine being a hydroethanolic extract of *Dysphania ambrosioides* at dosage concentrations

of 100 and 200 mg/kg. Overall, it has been discovered that *Dysphania ambrosioides* leaf extract exhibits a modest anxiolytic effect.[20]

9.11 *Euphorbia Hirta (Family- Euphorbiaceae)*

Anxiolytic properties of *Euphorbia hirta* hydro alcoholic extract were assessed in chronically stressed rats through the use of the elevated plus maze (EPM) and open field test (OFT). In prolonged immobilization stress, eh therapy (200 mg/kg, p.o.; seven days) demonstrated significant anti-anxiety activity. On the other hand, *Euphorbia hirta* only slightly reduced the anxiety brought on by the forced swim. The anxiolytic effect of *Euphorbia hirta* was significantly reduced in rats co-treated with flumazenil (0.5 mg/kg, i.p.), bicuculline (1 mg/kg, i.p.), or picrotoxin (1 mg/kg, i.p.), suggesting that the GABA(A) receptor-benzodiazepine receptor-Cl(-) channel complex mediates the activities of *Euphorbia hirta*. *Euphorbia hirta* is therefore a possible anxiolytic medication that may be helpful in the management of anxiety disorders brought on by stress.[21]

9.12 *Glorisa superba linn (Family – Colchicaceae)*

The Elevated plus Maze (EPM) model was used to examine *G. supberba Linn*'s anti-anxiety effects in albino mice. After receiving an oral dose of 300 mg/kg of the extracts, albino mice's behavior was monitored using an EPM. A positive control of 2 mg/kg P.O. was administered using diazepam. According to the findings, alcoholic extract performed significantly better than the prescribed medication.[22]

9.13 *Hypericum perforatum (Family-Hypericaceae)*

Rats were used in a variety of anxiety-inducing experimental paradigms, including open field exploratory behavior (OFB), elevated plus maze (EPM), elevated zero maze (EZM), novelty-induced suppressed feeding latency (FL), and social interaction (SI) tests, to examine the anxiolytic activity of a 50% ethanolic extract of Indian *Hypericum perforatum*. For three days in a row, Indian *Hypericum perforatum* was given orally at various dose levels, and lorazepam (0.5 mg/kg, i.p.) was given acutely. On all anxiety paradigms, Indian *Hypericum perforatum* extract (100 and 200 mg/kg, p.o.) exhibited strong anxiolytic effects. In every test, the Indian *Hypericum perforatum* extracts exhibited reliable and noteworthy anxiolytic efficacy. The effects of lorazepam were more pronounced than those caused by a 50% ethanolic extract of Indian *Hypericum perforatum*.[23]

9.14 *Lawsonia inermis linn (Family – Lythraceae)*

Lawsonia inermis, or henna, is a perennial herbaceous plant in the *Lythraceae* family. *Lawsonia inermis* leaf methanolic extracts' anxiolytic effect in mice was determined by EPM. Oral administration of methanolic extracts at 200 and 400 mg/kg bw was used. One Way Analysis of Variance was used to analyse the data (ANOVA). The findings demonstrated that the leaf extracts, compared to the methanolic extract, significantly increased anxiety. The results showed that *Lawsonia inermis l*eaves show signs of anxiousness, and more research is advised to identify the chemical ingredients causing this behavior.[24]

9.15 *Mimisa pudica L (Family – Fabaceae)*

In a mouse model of anxiety, the neuropharmacological effects of *Mimosa pudica* ethyl acetate extract are seen. The mice's elevated plus maze (EPM), light-dark box (LDB), and social interaction (SI) tests were used to assess the anti-anxiety potential of EAMP. EAMP increased the amount of time spent in the light box of LDB and the open arm of EPM, demonstrating strong anti-anxiety activity. Compared to vehicle control, social engagement time increased significantly ($p<0.01$).[25]

9.16 *Moringa oleifera (Family-Moringaceae)*

The common name for *Moringa oleifera* Lam is drumstick. It is extensively distributed in the sub-Himalayan area and is frequently grown throughout India. In the Elevated plus maze paradigm, *M. oliefera* enhanced the number of entrances, time spent, and rearing in open arms. The test medication dramatically lengthened the duration spent in the light arena, rears in both the light and dark arena, and the transition between chambers in the light and dark paradigm.[26]

9.17 *Nymphaea alba linn (Family –Nymphaeceae)*

The ethanolic extract of *Nymphaea alba Linn's* anxiolytic action in mice. To evaluate the anxiolytic efficacy of the ethanolic extract of *N. alba Linn* in mice, three tests were utilized: the elevated plus maze test (EPMT), the light and dark test (L and DT), and the open field test (OFT). An oral dose of 1 mg/kg of diazepam was used as a conventional anxiolytic medication. The percentage of time spent and the number of entries in the open arm in the EPMT were both considerably enhanced by the ethanolic extract of *N. alba* (100 and 200 mg/kg, p.o.). The extract significantly increased the amount of time spent, the number of crossings, and the duration of immobility in the light box in both L and DT. The ethanolic

extract of *N. alba* may possess anxiolytic activity and provide a scientific evidence for its traditional claim.[27]

9.18 *Ocimum Sanctum (Family – Labiatae)*

Ocimum sanctum Linn (*Labiatae*), a well-known medicinal plant, was tested for its ability to treat MADD using an ethanol leaf extract against anxiety and depressive condition. 20–25g Swiss albino mice were employed. The elevated plus maze, hole board, and light-dark tests were among the anxiety-inducing exercises. Its antianxiety activity is indicated by the observation of p.o. body weight versus light-dark, raised plus maze, and hole board tests at a dose of 50 mg/kg. The *Ocimum sanctum* extract may be a useful treatment for mixed anxiety and depressive syndrome since it exhibits both antianxiety and antidepressant qualities at the same dosage.[28]

9.19 *Plectranthus amboinicus (Family – Lamiaceae)*

Rats were used to evaluate the potent aqueous and alcoholic extracts of *Plectranthus amboinicus* leaves utilizing the elevated plus maze (EPM) and the light-dark test (LDT) for anxiolytic-like effects. A 2% acacia suspension was administered in identical volumes to control rats, whereas diazepam (2 mg/kg) was administered to positive control rats. Single administrations of *Plectranthus ambonicus* aqueous/alcoholic extract (250 & 350 mg/kg, i.p.).In the EPM and LDT, neither benzodiazepines nor the aqueous and alcoholic extracts of *Plectranthus amboinicus* extract caused any obvious behavioral changes or motor impairment. These findings suggest that the extract of aqueous and alcoholic extracts of *Plectranthus amboinicus* is a useful anxiolytic.[29]

9.20 *Pongamia pinnata (Family – Fabaceae)*

The CNS depressive and anti-anxiety effects of *Pongamia pinnata* leaf hydro-alcoholic extract. In the acute toxicity report, the hydro-alcoholic leaf extract *Pongamia pinnata* of did not exhibit any indicators of toxicity or mortality at the dose level of 1000 mg/kg body weight. Rats were used to study the anti-anxiety behavior utilizing light and dark model techniques. Rats were used to test the extract's CNS depressive activity using an actophotometer (Rolex). Similar to the control group's (diazepam-treated) mice in the current investigation, the research group's animals (Hydro-alcoholic leaf extract *Pongamia pinnata* 200 gm/kg treated) demonstrated substantial anti-anxiety and CNS depressive behavior. The hydro-alcoholic leaf extract from *Pongamia pinnata* possesses potent CNS depressive and anti-anxiety effects.[30]

9.21 *Rubia cordifolia (Family – Rubiaceae)*

To evaluate the anxiolytic effects of an ethanolic extract made from *R. cordifolia* stem in Wistar albino rats. To measure the anxiolytic activity, the models elevated plus maze (EPM) and light & dark arena (LDA) were used. Six mice were divided into four groups: diazepam (2 mg/kg po), distilled water (10 mg/kg po), extract test dosage 1 (100 mg/kg po), and extract test dose 2 (200 mg/kg po). The study's anxiolytic impact was nearly identical to that of the typical anxiolytic medication, diazepam 2 mg/kg (EDA: 25.6 ± 0.4 and EPM: 49.7 ± 1.7).In Wistar albino rats, the stem of *R. cordifolia* ethanol extract at a concentration of 200 mg/kg shows encouraging anxiolytic qualities.[31]

9.22 *Scoparia dulcis linn (Family – Scrophulariaceae)*

Scoparia dulcis, a significant medicinal herb, is a member of the *Scrophulariaceae* family. The crude hydro alcoholic extract of *S.dulcis L.*'s anti-anxiety properties using several behavioral models. The anti-anxiety activity of the extract at dosages of 100 and 200 mg/kg was assessed using the Open-field test [OFT], the Elevated plus Maze test [EPM], the Elevated Zero Maze test [EZM], and the Social Interaction test [SI]. Additionally, the findings of behavioral tests and the Novely-induced Suppressed Feeling Latency Test [FL] demonstrated that *Scoparia dulcis* has standard-level anti-anxiety activity that is dose-dependent. It was determined that there was anti-anxiety activity in crude hydro alcoholic extract.[32]

9.23 *Stachys tibetica vatke (Family – Lamiaceae)*

The herb *S. tibetica Vatke* grows throughout the world's tropical and subtropical climates, including Tibet, China, and India. The methanolic extract of *Stachys tibetica Vatke*'s root, stem, leaf, and entire plant material's anxiolytic effects in rats. One kilograms of powdered plant material for each portion was extracted using a Soxhlet apparatus and 95% methanol, yielding extractives with weight percentages of 12.8%, 8.3%, 17.2%, and 19.6%, respectively. Rats were used in the elevated plus maze (EPM) test to assess the anxiolytic effects of the extracts. The stem demonstrated the lowest anxiolytic activity (*P < 0.05, **P < 0.01) in EPM, whereas the entire plant and leaf materials displayed the highest activity, with the base showing an intermediate level. The results strongly justify the use of this plant for the treatment of anxiety.[33]

9.24 *Vitex negundo linn (Family – Verbenaceae)*

An ethanolic extract made from *Vitex negundo* roots was tested for its anxiolytic-like properties in mice utilizing the elevated plus maze (EPM) and the light-dark exploration test. Male mice were given oral treatment with either the *Vitex negundo* extract or the positive control drug, diazepam. When 100 and 200 mg/kg of *Vitex negundo* extract were administered orally, the proportion of time spent on and the number of entry into the open arms of the EPM rose significantly ($P > 0.01$). The outcome was similar to that of diazepam, a benzodiazepine (2 mg/kg p.o.). Rats treated with diazepam in the light-dark exploration test exhibited a significant ($P > 0.01$) increase in the amount of time spent in the light arena and a significant decrease in the duration of immobility; rats treated with *Vitex negundo* also shown a significant increase in the amount of time spent (100 and 200 mg/kg) in the light arena. These findings suggest that *Vitex negundo* is a useful anxiolytic.[34]

9.25 *Withania somnifera (l) (Family – Solanaceae)*

In Ayurveda, the roots of *Withania somnifera* are widely utilized to support both mental and physical well-being. The bioactive glycowithanolides extracted from *Withania somnifera* roots, and their anxiolytic effects in rats by using EPM. For five days, glycowithanolides (20 and 50 mg/kg) was given orally once daily. The outcomes were compared to those obtained from anxiolytic studies using benzodiazepines, such as lorazepam (0.5 mg/kg, i.p.). In tests of elevated plus-maze, social interaction, and feeding latency in an unknown environment, glycowithanolides had an anxiolytic effect similar to that of lorazepam.WS is used in Ayurveda and clinical anxiety problems as a mood stabilizer.[35]

CONCLUSION

Medicinal plants have proven to be an excellent alternative to prescription medications. When medicinal plants are used with a raw vegan diet and other regular workouts, they may create an improvement in overall health that is not seen with prescription treatments. In a review of the study, we found that the anxiolytic actions of diverse plant extracts in mice/rats at various doses produced significant findings in terms of anxiolytic activity utilizing EPM and other metrics. However, the use of various medicinal plants for the treatment of anxiety disorder has yet to be proven.

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