



"Harnessing The Power Of Nature: A Review Of Herbal Plants For Managing Anxiety"

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Article History	Abstract
Received: 2 Dec 2023 Revised: 25 Dec 2023 Accepted: 3 Jan 2024	The most prevalent mental illnesses are anxiety disorders. Disturbances in emotion, thinking, behavior, and bodily functions are some of its symptoms. It encompasses obsessive-compulsive disorder, panic disorder, agoraphobia, generalized anxiety disorder, specific phobia, social phobia, acute stress disorder, and post-traumatic stress disorder. The current study aims to provide light on the symptoms, etiology, pathophysiology, indicators, and treatments associated with anxiety. Anxiety is frequently accompanied by symptoms that interfere with sleep, focus, social and/or professional functioning. Anxiety is linked to restlessness, tenseness, or feeling on edge. easily worn out, agitated, tense in the muscles, inability to focus or lose one's train of thought. Anxiety may have multiple etiologies, such as stress, physical health issues, genetics, and environmental influences. A disturbance in the central nervous system's regulation could be the cause of anxiety symptoms. Many people think that the development of it is caused by reduced serotonin system activity and high noradrenergic system activity. Consequently, the first-line treatment for it is a combination of selective serotonin reuptake inhibitors and serotonin-norepinephrine reuptake inhibitors.
CC License CC-BY-NC-SA 4.0	Keywords: Depression, anxiety, Signs, Symptoms, Etiology, Pathophysiology, Treatment.

INTRODUCTION:

The most prevalent or commonly occurring mental illnesses are anxiety disorders.^[1] Anxiety is a normal part of life.^[2] Anxiety disorders, which include panic disorder (with and without a history of agoraphobia), agoraphobia (with and without a history of panic disorder), generalized anxiety disorder, specific phobia, social phobia, obsessive-compulsive disorder, acute stress disorder, and post-traumatic stress disorder, are manifest by disturbances of mood, thinking, behavior, and physiological activity^[3]. According to the National Institutes of Mental Health, depression affects roughly 16 million individuals in the United States.^[4] Depression is a

significant mood illness marked by anhedonia, or a diminished ability to enjoy pleasure, insomnia or hypersomnia, psychomotor agitation or retardation, exhaustion, feelings of worthlessness or guilt, difficulties focusing, and recurring thoughts of suicide or death. More than 25 million Americans, according to the American Psychiatric Association (2016), have anxiety disorders, which include repeated panic episodes and chronic, excessive concern about things or situations^[5]. For at least six months, a person must have experienced excessive anxiety and concern. They must also struggle to regulate their worrying. The worry is connected to three or more of the subsequent signs for a minimum of six months: Restlessness, feeling tense or on edge, being quickly tired, having trouble focusing or going blank, impatience, tightness in the muscles, disturbed sleep, and irritability^[1]. Patients with cancer are more likely to experience depression and anxiety, which have a detrimental influence on quality of life.^[6] Anxiety, depression, or adjustment disorder, which is characterized by feelings of stress in reaction to a significant event like a cancer diagnosis, affect one in three patients (32%) today. Patients with breast cancer (42%), head and neck cancer (41%) and melanoma (39%), were said to be the most afflicted. Poor performance status, as measured by a validated version of The Eastern Cooperative Oncology Group Scale to measure functional status, pain, aging, and low levels of education are risk factors for depression, whereas poor performance status, aging, and female gender were predictors of anxiety.^[7] Depression and anxiety also contribute to long term stress in cancer patients.. Depression can have major side effects, including reduced quality of life. poorer anticancer treatment compliance, suicide, longer hospital admissions, and decreased survival.^[8] According to demographic studies, the prevalence of anxiety disorder ranges from 24% to 36% in respondents with insomnia complaints and from 27% to 42% in those with hypersomnia.^[2] Anxiety (anxietas-worry, dread, unease) is a psychological state marked by an excess of emotion. It occurs as a result of stress, which, in conjunction with the genetically innate level of emotional activity and reactivity, causes an excessive manifestation of emotionality, manifested by excessive changes in behavior and activation of the autonomic nervous system (dilation of pupils, tachycardia, palm sweating, respiratory disorder, GIT disorders, and so on).^[9] A person must have excessive fear and anxiety (over exaggerated or disproportional fear), persistent symptoms that last for a long time, and symptoms that are linked to disruptions in their social, professional, or other significant aspects of life in order to receive an anxiety disorder diagnosis. The majority of childhood and adolescent concerns are developmentally normal.^[10] at adulthood, temporary dread and anxiety might occur at stressful times, but these feelings are rarely classified as anxiety disorders unless they are persistent (for more than six months) and interfere with a person's everyday activities.^[9] However, in severe cases, anxiety can impede normal human function for an extended period of time, necessitating treatment. Mild abnormalities can arise in hypersensitive people during every doctor's or dentist's appointment, but also in anticipation of the diagnostic procedure, particularly after obtaining diagnoses of serious diseases or illnesses accompanied by acute or persistent pain, or before surgical procedures.^[9]

There are five categories of anxiety disorders:

- Social Anxiety Disorder (SAD)
- Post-Traumatic stress disorder (PTSD)
- Generalized Anxiety Disorder (GAD)
- Panic Disorder
- Obsessive Compulsive Disorder (OCD) ^[9]

Numerous phobias, or irrational fears, are associated with panic disorders. Certain situations, such as going outside (agoraphobia), remaining indoors (claustrophobia), going out in public (social phobia), or having a pathological fear of spiders (arachnophobia), can cause phobic anxiety. An raised sympathetic tone, pervasive fear, and physical symptoms including sweating, tachycardia, chest discomfort, shivering, and fear of suffocation are all characteristics of panic disorders.^[9] it is not uncommon for people with anxiety disorders to also have other mental conditions (typically depression), or chronic ailments of the cardiovascular, respiratory, or endocrine systems. Additionally, the use of drugs and psychoactive substances, psychostimulants, alcoholism, CNS depressant withdrawal syndrome, drunkenness, or drug side effects might have a direct impact on anxiety disorders. In contrast to psychosis, when there is no knowledge of the illness or acceptance of it, a patient with an anxiety disorder is aware of his condition but nevertheless experiences difficulties carrying out his everyday tasks.^[11]

1.Social Anxiety disorder(SAD) : is characterized by a strong and persistent anxiety of social or performance circumstances.^[12]

2.Post-Traumatic disorder(PTSD) : Symptoms include flashbacks or dreams about what happened, hypervigilance, easily startled, withdrawing from others, and avoiding circumstances that remind the individual of the occurrence.^[12]

3.Generalized Anxiety Disorder(GAD) : Those suffering from this illness have non-specific chronic anxiety and worry and become unduly preoccupied with everyday concerns such as health, job, money, or family, and they have these symptoms even when there are no signals of problems in their lives.^[13]

4.Panic disorder : In this form of condition, the person has brief bouts of acute panic and apprehension that are typically accompanied by shivering, shaking, disorientation, dizziness, nausea, and trouble breathing.^[12]

5.Obsessive Compulsive Disorder(OCD) : This significant type of anxiety disorder is marked by obsessions, or persistent thoughts that may not be related to actual issues but that the individual is unable to ignore or repress .Compulsions are repeated behaviors that a person feels compelled to carry out as a result of an obsession. The compulsive behaviors aim to lessen the suffering brought on by the obsessions.^[12]

Anxiety has been linked to a higher risk for developing various medical illnesses and has a significant impact on both general quality of life and everyday functioning. Additionally, anxiety disorders can be equally incapacitating as physical problems due to their high individual and societal costs and tendency to be persistent. People with anxiety disorders are higher care users than those with other mental diseases and see general practitioners more frequently than psychiatric specialists, which puts a burden on the health care system and/or private insurance prescription benefit programs.^[14]

Herbs

- Ashwagandha
- brahmi
- kava kava
- Chamomile
- Lavender
- Passionflower

1. Ashwagandha



FIG1: Roots of Ashwagandha

PHARMACOGNOSY OF ASHWAGANDHA

Synonym: Indian ginseng, Ajagandh, Kanaje Hindi and Samm Al Ferakh.

Biological source : It is obtained from the roots of the Ashwagandha plants.

Family: *solanaceae*

Geographical Source: It Is widely produced in the arid regions of South Asia, Central Asia, and Africa.⁽¹⁵⁾

Chemical Constituents : Withanolides, Alkaloids, Saponins, Tannins, Phytosterols, Amino Acids, Vitamins and Minerals .

Use: Stress & Anxiety Management, Improved sleep, Immune system support, Menstrual health, Cronice conditions.

VERNACULAR NAMES

Sanskrit: Balada, Gandhanta, Punya, Balya, Vrusha, Vajinama, Hayahya.

Hindi: Ashwagandha

English : Winter chetty

Gujarati : Aaswgandha

PHARMACOLOGICAL ACTIVITIES OF ASHWAGANDHA

Anti-inflammatory, antioxidant, anti-arthritic, anticancer, anxiolytic, and immunomodulatory.

The *Solanaceae* family includes the tiny plant known as ashwagandha (*Withania somnifera* (L.) Dunal). It is frequently utilized in Ayurveda, a traditional Hindu medical system, and is widely produced in the arid regions of South Asia, Central Asia, and Africa.^[15] Ashwagandha roots are known as "rasayana" in Ayurvedic medicine, a supplement that improves both physical and mental function.^[16] Ashwagandha has been used for centuries to enhance "youthful vigor" by boosting physical stamina, endurance, and general well-being.^[17] Pharmacological investigations have demonstrated the anti-inflammatory, antioxidant, anticancer, anxiolytic, and immunomodulatory properties of ashwagandha plant extract. Additionally, it has been demonstrated to affect cardiovascular, endocrine, and neurological function.^[17] High levels of stress are frequently a factor in mood depression conditions like anxiousness and as a conduit for Ashwagandha has been studied for its ability to reduce stress and anxiety in several human tests. double-blind, placebo-controlled studies in 2 studies, ashwagandha was linked to more significant decreases in Adults with anxiety who exhibit it mostly as generalized anxiety disorder.^[18] In this eight-week, prospective, randomized, double-blind, placebo-controlled trial, the stress-relieving efficacy of Ashwagandha root extract was evaluated in stressed healthy people^[19]. The specific binding of GABA ligands to their receptor sites was shown to be inhibited by a methanolic extract of ashwagandha root, whereas the binding of flunitrazepam to those receptor sites was found to be elevated, exhibiting a GABA-mimetic effect.^[20] The extract was well accepted and had no worse side effects than the control group.^[20]

2. Brahmi

FIG 2: Leaves of Brahmi

PHARMACOGNOSY OF BRAHMI

Synonyms : *Bacopa monnieri*

Biological Source : It Is obtained from the entire Brahmi plant.

Family: *Plantaginaceae*

Geographical Source : It Is widely produced in the Indian Subcontinent, m Australia, North America.

Chemical Constituents: Bacosides, Alkaloids, Saponins, Flavonoids, Phytosterols, Triterpenoid Saponins

Uses: Cognitive enhancement, stress and anxiety Reduction, Neuroprotection, Respiratory health.

VERNACULAR NAMES

Sanskrit : Brahmi

Hindi: Brahmi

English : Water Hyssop

Gujarati : Brahmi

PHARMACOLOGICAL ACTIVITIES OF BRAHMI

Available online at: <https://jazindia.com>

Anti-inflammatory, antioxidant, anti-epileptic, anti-aging, Anti-depressant, Anxiolytic.

Over 3,000 years ago, the Indian subcontinent began using brahmi leaf as a traditional Ayurvedic remedy for a variety of CNS conditions. It is known as a "memory tonic."^[21] Numerous CNS functions, including nootropic, antidepressant, anxiolytic, and antioxidant effects, have been revealed in preclinical study. Brahmi also alters the acetylcholine, dopamine, serotonin, and noradrenaline (norepinephrine) pathways and boosts protein kinase activity in the hippocampus, according to preclinical research.^[21]

It is believed that bacoside A is the main chemical component. Brahmi (80 mg/kg p.o.) altered anxiolytic behavioral activity in the light/dark test and in the EPM in an isolated rat model.^[22]

Brahmi was discovered not to affect motor function. Standardized brahmi extracts have been demonstrated to have anxiolytic effects in addition to being a highly effective memory enhancer, according to the majority of RCTs. Calabrese et al carried out a double-blind RCT to investigate the plant's anxiolytic function in addition to its cognitive-improving benefits. 54 subjects, 65 years of age or older, with mild cognitive impairment, participated in the 12-week RCT (with an additional 6-week placebo run-in), and it discovered that a standardized brahmi extract (300 mg/day) significantly decreased combined State and Trait scores.^[23]

3. Kava Kava

FIG 3: Dried rhizomes of kava kava

PHARMACOGNOSY OF KAVA KAVA

Synonyms : Piper methysticum

Biological Source : It is obtained from the roots of the kava plants.

Family : Piperaceae

Geographical Source : Fiji, Hawaii, Samoa, and other Pacific islands.

Chemical Constituents : The main components are 43% starch, 20% fibers, 3–20% kavalactones, 3.2% sugars, 3.6% proteins, 3.2% minerals (e.g., potassium, calcium, magnesium, sodium, aluminum, and iron), dihydrochalcones (e.g., flavokavins) and alkaloid pipermethystine.

Uses : Relaxation and stress reduction, sleep aid, Mood enhancement, Pain relief, muscle relaxation.

VERNACULAR NAMES

Sanskrit : yakrit

Hindi: kava

English : kava kava

Gujarati : kava

PHARMACOLOGICAL ACTIVITIES OF KAVA KAVA***Anxiolytic, Antidepressant, Anti-inflammatory, Anti-convulsant.***

Kava-kava, also known by its scientific name *Piper methysticum* G. Forst., grows as a shrub that reaches heights of 2 to 3 meters. It is a plant with two sexes. Its leaves include huge stipules, a deep cordate base, 9 to 13 major ribs, and a length of 13 to 28 cm by a width of 10 to 22 cm. Small flowers are found in spike-shaped inflorescences that range in length from 3 to 9 cm. Kava-kava has a large, branching root system that weighs 2 to 10 kg. Native to the Santa Cruz Islands and Vanuatu^[24]. Dried rhizomes of varying sizes are used as plant material. They can range in size from 3 to 20 cm long and 1 to 5 cm broad.^[24] Kava is a plant native to the South Pacific that is traditionally used for religious, social, and cultural reasons. It has also been used as medication and is popular in Western culture due to its success in lowering anxiety.^[25] Kava usage has gained popularity in Western nations since the 1990s, with several kava products (of various types) Anxiolytic Psychopharmacology from Plants quality) being marketed for anxiety and insomnia. The lipophilic resinous

components of kava are assumed to be the pharmacodynamic mechanism underlying its anxiolytic effects, called kavalactones. The total amount of kavalactones is concentrated mostly in the roots, rhizomes, and root systems of the plant's stems^[26]. The plant's aerial components, which contain deadly alkaloids like pipermethystine and are not traditionally consumed. Up to this point, 18 distinct kavalactones have been discovered, accounting for around 96% of the overall pharmacological action. due to the existence of six kavalactones: Methysticin and dihydromethysticin, as well as kavain, Yangonin and desmethoxyyangonin.^[27]

4. Chamomile



Fig 4: Flowers of Chamomile

PHARMACOGNOSY OF CHAMOMILE

Synonyms : *Matricaria chamomilla* or *Chamaemelum nobile*

Biological Source : It is obtained from the dried flowers of the chamomile plant.

Family : *Asteraceae*

Chemical Constituents : Chamazulene, bisabolol, apigenin, terpenoids, flavonoids.

Geographical Source : Asia, Europe, North America.

Uses : Stress and anxiety reduction, sore throat relief, menstrual cramp relief, eye care, mouthwash, hair and skin care.

VERNACULAR NAMES

Sanskrit : Brahmi

Hindi : Baboonh

English : Chamomile

Gujarati : Chamomail

PHARMACOLOGICAL ACTIVITIES OF CHAMOMILE

Anti-microbial, Anti-spasmodic, Antioxidant, Anxiolytic & Anti-inflammatory.

In addition to excessive concern about everyday issues, generalized anxiety disorder (GAD) is characterized by restlessness, exhaustion, difficulties focusing, irritability, muscular tightness, and sleep issues.^[28] Nearly 9 million persons in the United States have GAD, which has a lifetime frequency of around 5%.^[29] GAD is the second most common mental condition treated in the primary care context, and it causes significant discomfort and impairment that are only surpassed by severe depression, the disorder that is treated the most frequently.^[30] Benzodiazepines and selective serotonin-reuptake inhibitors, also known as serotonin-norepinephrine reuptake inhibitors (SSRI/SNRIs), are being used as psychopharmacological therapies for GAD.^[31] Nonetheless, some people do not benefit from these treatments, and others are unable to handle their negative effects^[32]. Because of this, people with anxiety frequently turn to complementary and integrative therapy, including herbal medicine products, to address this condition.^[33]

One of the most popular herbal treatments in the world is chamomile (*Matricaria chamomilla* L.). According to Salmon (1992), it is included in the pharmacopeia of 26 nations. Chamomile and some of its flavonoid components may have anxiolytic and antidepressant properties, according to limited basic scientific studies.^[34] We conducted a randomized, double-blind, long-term safety and effectiveness research of chamomile treatment in GAD to further our early findings since we knew that GAD was a recurring condition that frequently required long-term medication. Our main goal was to determine if long-term chamomile treatment, as opposed to a placebo, increased the time it took for anxiety symptoms to return after recovering from GAD. In patients who had recovered from GAD, our secondary goal was to assess the relative safety and tolerability of long-term chamomile treatment in comparison to placebo.^[35]

Our research is the first prolonged placebo-controlled examination of chamomile in people. With few moderate adverse effects that were indistinguishable from placebo, chamomile seems to be harmless. The continued use of chamomile was related with considerably reduced GAD symptoms, enhanced psychological wellbeing, and a non-significant reduction in GAD relapse among those who responded to initial treatment. Additionally, regular chamomile consumption may lead to better blood pressure and weight profiles. For chamomile oral extract to be recognised as a secure and efficient treatment for GAD patients, these encouraging long-term outcomes must be validated in a well-powered multicenter clinical research. ^[36]

5. Lavender



Fig 5: Flowers of Lavender

PHARMACOGNOSY OF LAVENDER

Synonyms : *Lavandula angustifolia*

Biological Source : essential oil is obtained from the flowering tops of the *lavandula angustifolia*.

Family : *Lamiaceae*

Chemical Constituents : camphor, terpinen-4-ol, borneol, caryophyllene.

Geographical Source: France, Bulgaria, Spain, England.

Uses : sleep aid, stress reduction, pain relief, mood enhancement, respiratory health, cosmetics and perfumes.

VERNACULAR NAMES

Sanskrit : Dharadara

Hindi: lavender

English : *lavandula angustifolia*

Gijarati : lavendar

PHARMACOLOGICAL ACTIVITIES OF LAVENDER

Anxiolytic, Anti-inflammatory, Antioxidant, Antimicrobial and antifungal.

According to the European Medicines Agency monograph on lavender, lavender flowers are the herbal remedy used for the following indications: treatment of moderate symptoms of mental tension and weariness, and to promote sleep^[37]. These therapeutic uses that have been allowed are based on custom. Lavender flowers can be consumed as a tea or used to make a tincture and essential oil using the steam distillation method. Additionally, you can use essential oils as a bath addition.^[38]

In addition to up to 13% tannins, lavender flowers also contain 1-3% essential oil, coumarin derivatives (umbelliferone, herniarin), flavonoids, traces of sterols (cholesterol, campesterol, stigmasterol, and -sitosterol), p-coumaric acid, gentisic acid, p-hydroxy-benzoic acid, caffeic acid, melilotic acid, sinapic acid, and vanillic. Lavender oil exhibits antibacterial, spasmolytic, and estrogenic properties in vitro. Anticonvulsive, sedative, anti-inflammatory, and analgesic actions have been seen in vivo in rats and mice. These effects might not be present in people at meaningful dosages because these studies often utilized large doses.^[39]

6. Passion Flower



Fig 6: Flower of Passion Flower

PHARMACOGNOSY OF PASSION FLOWER

Synonyms : Maypop, Apricot vine, *Passiflora incarnata*

Biological Source : it is obtained from the aerial parts of the plant, including the leaves, stems, and flowers.

Family : Passifloraceae

Chemical Constituents : Flavonoids, Alkaloids, Amino acids, Volatile oil and coumarins.

Geographical Source : Europe, Asia, Africa, southeastern United States and central America.

Uses : Anxiety and stress management, insomnia and sleep disorders, sedative effects, muscle relaxation, respiratory health, tension headaches.

VERNACULAR NAMES

Sanskrit : Pashanabheda

Hindi : paishanflaar

English : Passiflower

Gujarati : Peshanphalvar

PHARMACOLOGICAL ACTIVITIES PASSIONFLOWER

Anxiolytic, sedative and hypnotic properties, Antioxidant, Antidepressant potential.

The real passionflower or maypop is the popular name for *Passiflora incarnata* L., a member of the Passifloraceae family.^[40] *Passiflora incarnata* is a native of the Americas and has been used for centuries to treat stress, anxiety, and sleep problems.^[41,42,43]

The stem can grow up to ten meters. The underside of the leaves has denser hairs in addition to being alternating, petiolate, serrate, and delicately pubescent. The blooms have a diameter of up to 9 cm, white petals and sepals, a purple or pink outer corona, and a shorter, white inner corona. Fruits are edible, 5 cm in diameter, and yellow.^[44]

C-glycosylated flavonoids such as vitexin, isovitexin, schaftoside, isoschaftoside, orientin, isoorientin, and swertisin are the phytochemicals that may be identified in aqueous preparations of maypop. Additionally, free flavonoids such as apigenin, luteolin, quercetin, kaempferol, and chrysin are present.^[46]

Alkaloids like chrysin, flavonoids like schaftoside, isoschaftoside, and swertisin, and phenolic compounds are among the principal ingredients that have been found.^[47] A variety of mechanisms, including affinities for the GABAA and GABAB receptor subtypes and inhibition of GABA reuptake, are capable of modulating GABAergic activity through activation of the GABA-A receptor complex's positive allosteric regulation via BDZ websites.^[48,49]

The indole type (beta-carbolines) alkaloids found in *Passiflora* species have been demonstrated to be excellent sedatives and blood pressure reducers. Among *Passiflora* species that contain alkaloids, maypop is the most researched. The presence of harmine, harmol, harmaline, harmalol, and harmanin in the raw *Passiflora* material was reported by Lutomski et al. in the 1960s. These alkaloids are present, but only in trace amounts, making it impossible to identify them in the majority of commercially accessible goods.^[45]

Although the exact chemical components that give maypop its anxiety-relieving properties are not yet entirely known, the majority of published investigations imply that phenolic compounds, particularly those from the flavonoid class, are related to this function. Because *Passiflora* flavonoids are partial agonists of GABAA receptors and block the absorption of [3H]-GABA in rat cortical synaptosomes, the mechanism of action is likely connected to the regulation of the GABA system. According to Wasowski and Marder, flavonoids, such as apigenin and chrysin, are GABAA receptor ligands that bind to the GABAA receptor's benzodiazepine binding site and have anxiolytic action but no sedative or muscle-relaxing effects. Different structural traits of the harman alkaloids included in maypop interact with benzodiazepine receptors.^[50]

The European Medicines Agency states in its maypop monograph that long-term usage (> 4 weeks), use during pregnancy and breastfeeding, or in children or adolescents under the age of 12 cannot be recommended, despite the fact that maypop is not known to contain hazardous chemicals and no negative effects have been observed. Maypop has sedative properties that may impair one's ability to drive and operate machines.^[51,52]

CONCLUSION

We may conclude that anxiety is characterized by disruptions in mood, thought, behavior, and physiological activity, along with related problems in sleep, focus, social and/or professional performance. It is also connected to restlessness, being easily tired, having trouble focusing or losing your train of thought, being tense in your muscles, feeling tense or agitated. Anxiety can have various etiologies, such as stress, diabetes, depression, heredity, and environmental variables. Treatment options for anxiety disorders include medication, psychotherapy, or a mix of the two.

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