



A REVIEW ON “ROLE OF TRADITIONAL MEDICINAL PLANTS IN ANXIETY AND DEPRESSION

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ABSTRACT

Anxiety and depression are prevalent psychiatric disorders worldwide, significantly affecting the quality of life and daily functioning. Conventional pharmacological treatments, including benzodiazepines and selective serotonin reuptake inhibitors (SSRIs), are effective but often associated with adverse effects, tolerance, and incomplete response. Traditional medicinal plants have been used for centuries in various cultures to manage mental health disorders, offering a promising complementary approach due to their safety, accessibility, and multifaceted pharmacological properties. This review focuses on the role of key medicinal plants such as *Withania somnifera* (Ashwagandha), *Bacopa monnieri* (Brahmi), *Hypericum perforatum* (St. John’s Wort), *Passiflora incarnata* (Passionflower), and *Lavandula angustifolia* (Lavender) in alleviating anxiety and depression. Traditional

medicinal plants thus represent a valuable resource for the management of anxiety and depression, with the potential to complement conventional pharmacotherapy and improve patient outcomes.

KEYWORDS: Anxiety, Depression, Traditional Medicinal Plants.

INTRODUCTION

Medicinal plants are increasingly being used to manage depression. This approach, called phytotherapy or herbal medicine for depression, is gaining attention in mental health and complementary medicine. Depression is a common mental disorder that seriously affects human performance. Its development is influenced by several factors, mainly biological and social. Biological causes include genetic predisposition, changes in neurotransmitters and hormones, and abnormalities in certain brain regions. Intrinsic stressors such as altered levels of cholesterol, triglycerides, glucose, and clotting factors are also linked to depression. Overall, depression results from a complex interaction of biological, social, psychological, and epigenetic factors. Treatment Goal: The main aim is to achieve complete remission of symptoms as quickly as possible and to prevent relapse. Problems with synthetic antidepressants: Narrow treatment spectrum, Severe side effects (headaches, sexual dysfunction, seizures, addiction, suicide attempts), High cost, Risk of relapse.

Why herbal medicines use?

They can reduce the harmful side effects of synthetic drugs. Many patients prefer them because they are generally safer and less toxic. Current research focuses on developing multidirectional herbal antidepressants with low toxicity and good effectiveness.

❖ ANXIETY

Anxiety disorders are common and disabling conditions that usually begin in childhood, adolescence, or early adulthood.

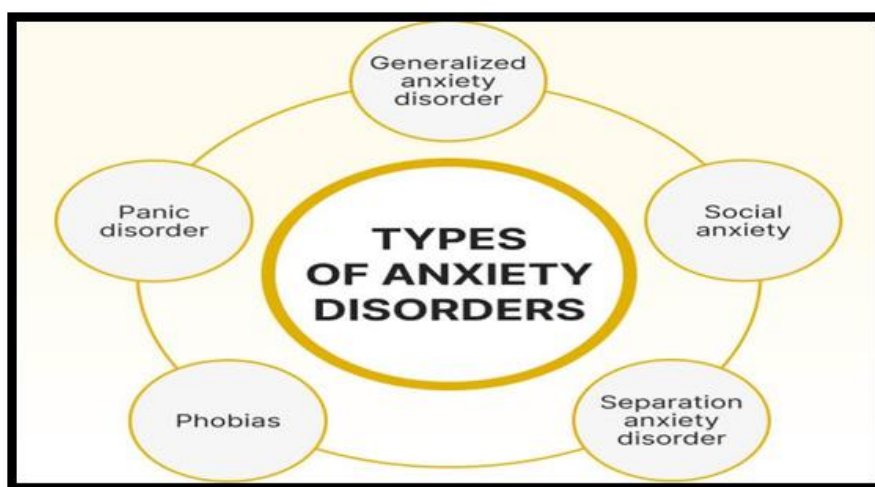


Fig. no. 1: Types of Anxiety Disorder.

Classifications of Anxiety Disorder

- 1) **Generalized Anxiety Disorders:** A mental health disorder that produces fear, worry, and a constant feeling of being overwhelmed.
- 2) **Social Anxiety Disorders:** A highly distressing chronic psychiatric disorder.
- 3) **Separation Anxiety Disorders:** One of the most common childhood anxiety disorders.
- 4) **Phobias Anxiety Disorder:** A phobia is an anxiety disorder in which a person feels intense and unreasonable fear toward a specific situation, object, place, or living being.
- 5) **Panic Anxiety Disorder:** Panic disorder is commonly seen in primary care settings. Since its symptoms resemble those of serious physical illnesses, most patients first consult a primary care physician or another non-psychiatric specialist. However, due to limited awareness of the condition, panic disorder is often underdiagnosed, leading patients to undergo unnecessary investigations.

Causes of anxiety

Causes of Anxiety Disorder in Children and Adults Anxiety disorders arise from multiple factors, including medical, psychological, genetic, and environmental influences.

1. **Medical Conditions:** Certain health conditions can trigger anxiety by affecting the nervous system. For example, pheochromocytoma—a tumor of the adrenal gland—secretes excess epinephrine, leading to hypertension and anxiety symptoms (Simos & Hofmann, 2013).
2. **Stress:** Chronic stress is a major contributor to anxiety (Stahl & Moore, 2013). Prolonged exposure to stressors such as financial problems or chronic illness increases vulnerability. Stress-related triggers differ across age groups:
Adolescents often experience anxiety related to body image and peer relationships.
Adults are more likely to worry about family responsibilities and health conditions like dementia.
3. **Substance Use and Withdrawal:** Drugs and alcohol are closely linked to anxiety disorders (Pine, Rothbaum & Ressler, 2015).

Alcohol: Some individuals become anxious while intoxicated, and recovering alcoholics commonly experience severe anxiety during withdrawal.

Caffeine: Excessive intake can trigger panic attacks (Simos & Hofmann, 2013).

Cannabis: Its psychoactive effects may induce panic and heightened anxiety.

4. **Genetics:** Genetic predisposition plays a significant role. Children of individuals with generalized anxiety disorder are at higher risk of developing anxiety disorders themselves (Wells, 2013).
5. **Environmental Factors:** Traumatic experiences such as child abuse or neglect can increase vulnerability. A combination of genetic susceptibility and adverse life experiences often leads to the early onset of anxiety disorders.
6. **Adaptive Role of Anxiety.** Anxiety Disorder Definition: iExperts emphasize that anxiety is not inherently harmful. It can serve as a protective response in dangerous situations, enhancing survival. However, individuals with poor coping mechanisms face greater risks of chronic anxiety and related health problem.

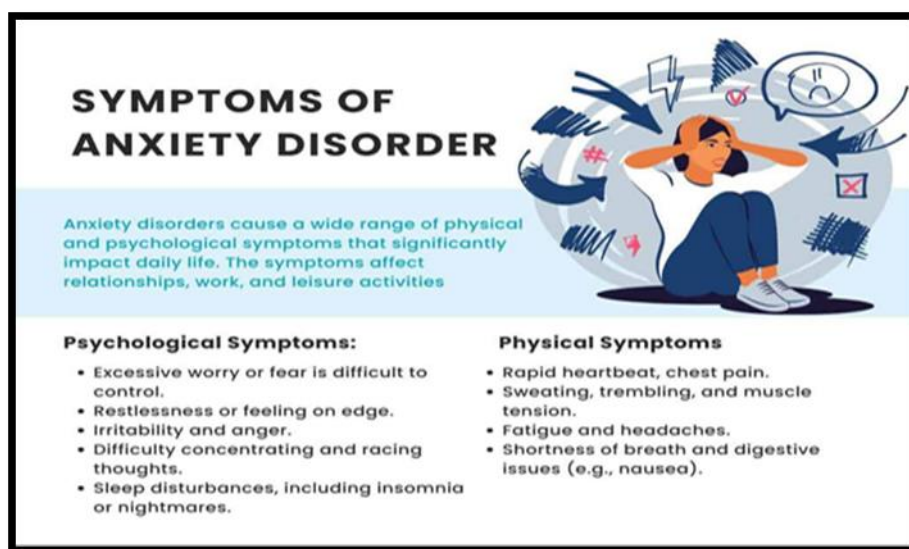


Fig. no. 2: Symptoms of Anxiety.

Pathogenesis of Anxiety

1. The main chemical messengers (neurotransmitters) involved in anxiety are norepinephrine, serotonin, dopamine, and GABA (gamma-aminobutyric acid).
2. The autonomic nervous system, especially the sympathetic branch, is responsible for most anxiety-related physical symptoms.
3. The amygdala plays a central role in processing fear and anxiety. In people with anxiety disorders, the amygdala shows increased activity when exposed to anxiety-provoking cues.
4. The amygdala and other limbic system structures are connected to the prefrontal cortex. Abnormal communication between these areas contributes to anxiety but can often be improved with therapy or medication.

Traditional Medicinal Plants Used in Anxiety

1. **Withania somnifera (Ashwagandha):** Adaptogen with stress-relieving and anxiolytic effects. Regulates cortisol, enhances serotonin & GABA activity. Improves stress resilience; reduces anxiety symptoms.



Fig. no. 3: *Withania somnifera*.

2. **Valeriana officinalis (Valerian Root):** Natural sedative and anxiolytic. Enhances GABA activity → calms nervous system. Helps with restlessness and insomnia. Non-addictive; no withdrawal effects.



Fig. no. 4: *Valeriana officinalis*.

3. **Passiflora incarnata (Passionflower):** Traditionally used for anxiety & insomnia. Increases GABA levels → relaxation, reduced excitability. Recommended for mild to moderate anxiety.



Fig. no. 5: Passiflora incarnate.

4. **Bacopa monnieri (Brahmi):** Nootropic herb; supports cognition & reduces anxiety. Boosts serotonin, neuroplasticity, and reduces oxidative stress. Improves stress adaptation & emotional stability.



Fig. no. 6: Bacopa monnieri.

5. **Matricaria chamomilla (Chamomile):** Contains apigenin (binds to GABA receptors). Mild sedative & anxiolytic (commonly used as tea). Helps alleviate generalized anxiety.



Fig. no. 7: Matricaria chamomilla.

6. **Ginkgo biloba:** Improves brain circulation & reduces oxidative stress. Enhances dopamine & serotonin activity → mood stabilization.



Fig. no. 8: Ginkgo biloba.

7. **Rhodiola rosea:** Adaptogen; reduces cortisol. Enhances serotonin & dopamine function. Improves resilience to stress, anxiety, and fatigue.



Fig. no. 8: Rhodiola rosea.

❖ DEPRESSION

Depression is a mood disorder characterized by: Persistent sadness, Loss of interest in previously enjoyable activities, Problems with thinking, memory, eating, and sleep in.

Types of Depression

- 1) **Clinical depression (Major Depressive Disorder – MDD):** Sadness, low mood, or feelings of worthlessness most days for ≥ 2 weeks, other symptoms: sleep problems, loss of interest, appetite changes, most severe and common form of depression
- 2) **Persistent Depressive Disorder (PDD / Dysthymia):** Mild to moderate depression lasting ≥ 2 years, Symptoms less severe than MDD
- 3) **Disruptive Mood Dysregulation Disorder (DMDD):** Chronic irritability and frequent anger outbursts in children, Symptoms begin before age 10
- 4) **Premenstrual Dysphoric Disorder (PMDD):** PMS symptoms + mood changes (irritability, anxiety, depression)
- 5) Symptoms improve a few days after menstruation begins. Can be severe enough to affect daily life
- 6) **Depressive Disorder due to Another Medical Condition:** Caused by health issues such as hypothyroidism, heart disease, Parkinson's disease, cancer. Treating the underlying condition often improves depression.

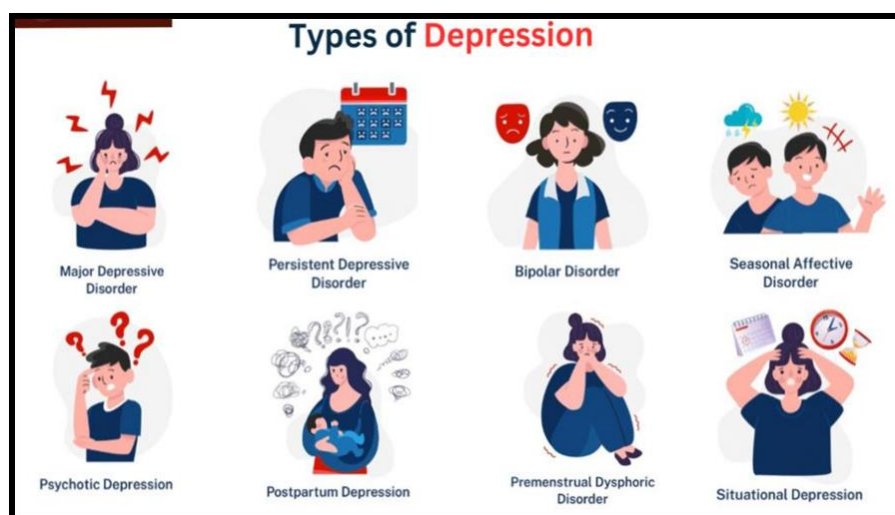


Fig. no. 9. Types of depression.

Causes of Depression

The causes of depression can be linked to several factors. Genetic features may increase an individual's susceptibility to depression. Changes in neurotransmitter levels in the brain can also contribute to the condition. Environmental factors, such as exposure to trauma and lack of social support, play a significant role. In addition, psychological and social factors are often involved. Furthermore, additional health conditions, such as bipolar disorder, may increase the risk of developing depression.

Signs and Symptoms of Depression

- Persistent low or depressed mood
 - Loss of interest or pleasure in usual activities or hobby
 - Changes in appetite and body weight
 - Reduced sexual desire
 - Noticeably slowed movements or restlessness/agitation
 - Low energy or persistent fatigue
 - Sleep disturbances (difficulty falling asleep, staying asleep, or oversleeping)
 - Feelings of agitation or irritability
 - Excessive guilt or feelings of worthlessness
 - Trouble concentrating, focusing, or making decisions
- main chemical messengers (neurotransmitters) involved in anxiety are norepinephrine, serotonin, dopamine, and GABA (gamma-aminobutyric acid).

Pathogenesis of Depression

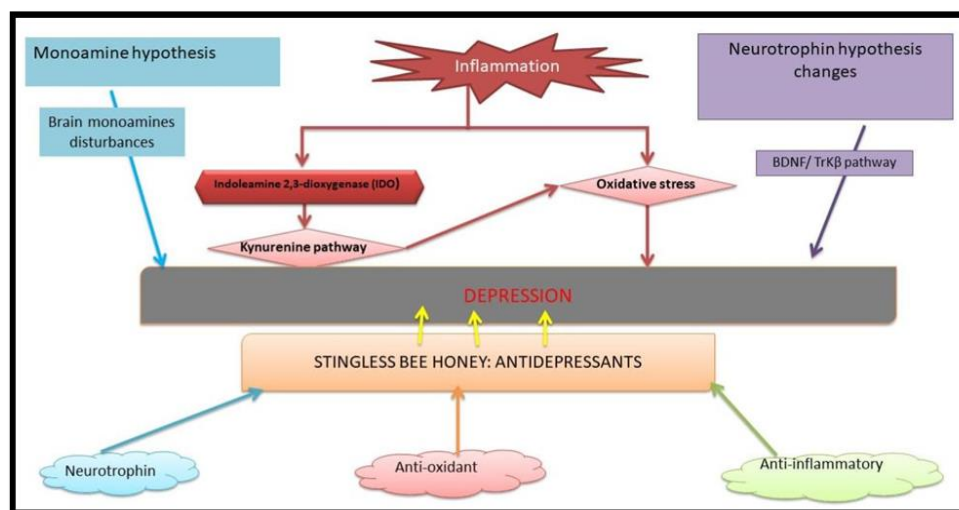


Fig. no. 10: Pathogenesis of Depression.

Traditional Medicinal Plants Used in Depression

- 1) **St. John's Worth:** It is a traditional herbal remedy commonly used for depression. However, it can significantly reduce the effectiveness of several medications, including: Birth control pill, Warfarin (blood thinner), Digoxin (heart medication), Cyclosporine, Certain HIV drugs, Certain cancer drugs.

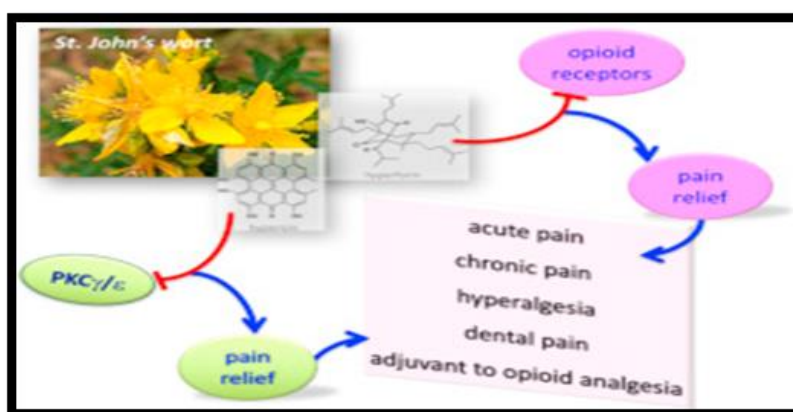


Fig. no. 11: St. John's Worth.

- 2) **Ginseng:** ginseng refers to a group of plants that includes both American and Asian ginseng. These plants contain active compounds called ginsenosides, which are believed to help reduce symptoms of depression.



Fig. no. 12: Ginseng.

- 3) **Chamomile:** Chamomile has two main types: German and Roman. German chamomile (*Matricaria chamomilla*) may provide benefits for people with depression and anxiety.

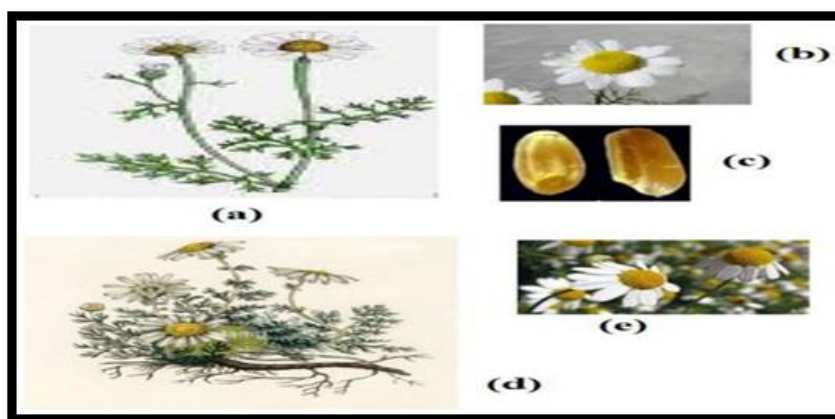


Fig. no. 13: Chamomile: Chamomile.

- 4) **lavender:** Lavender essential oil is a popular remedy for promoting relaxation. People use it in aromatherapy, which involves inhaling essential oils or applying them to the skin to achieve different effects.



Fig. no. 14: lavender.

- 5) **Saffron:** Saffron may help reduce depression symptoms. It can be more effective than a placebo. In some cases, it is as effective as certain antidepressants.



Fig. no. 15: Saffron.

Mechanism of Actions

1) ANXIETY

Anxiety disorders are linked to dysfunction in several neurotransmitter systems, including GABAergic, serotonergic, dopaminergic, noradrenergic, and endocannabinoid pathways. They are also associated with oxidative stress, neuroinflammation, and hyperactivity of the hypothalamic-pituitary-adrenal (HPA) axis. Traditionally, medicinal plants have been used to relieve anxiety, mainly due to their bioactive compounds such as flavonoids, alkaloids, saponins, terpenoids, and polyphenols. These compounds act through mechanisms like GABA-A receptor activation, serotonergic modulation, neuroendocrine regulation, and antioxidant activity.

2) DEPRESSION

The antidepressant mechanisms of these plants have been further characterized based on their modes of action, including activation of the antioxidant system, anti-inflammatory effects, modulation of neurotransmitters, neuroprotection, regulation of the hypothalamic-pituitary-adrenal (HPA) axis, and other antidepressant pathways.

CONCLUSION

1) ANXIETY

Traditional medicinal plants such as Ashwagandha, Brahmi, and Valerian exhibit significant anxiolytic effects. Their bioactive phytochemicals, including alkaloids, flavonoids, and terpenoids, modulate GABAergic and serotonergic pathways, reducing CNS hyperactivity, improving sleep quality, and alleviating stress. These plants provide a natural, safe alternative to synthetic anxiolytics, with minimal side effects and potential for long-term use.

2) DEPRESSION

Plants like St. John's Wort, Saffron, and Rhodiola offer antidepressant benefits by modulating serotonin and dopamine pathways through flavonoids, glycosides, and phenolic compounds. They enhance mood, emotional stability, and cognitive function, reducing depressive symptoms naturally and complementing conventional antidepressant therapies.

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