

Ethnopharmacological Review of Medicinal Plants for Brain Disorders - A Review

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Abstract: *It is customary to use plants to treat human diseases. There has been a recent Resurgence of interest. Field studies on ethnobotany have been conducted in a Variety of developing nations worldwide. It shows worry over the potential loss Of important knowledge regarding conventional medicine. Many times, Neurological problems are not seen as common ailments. Like epilepsy, which is The most severe chronic ailment, they are mental illnesses. Millions of individuals Are affected. Other diseases, such as Parkinson's, Alzheimer's, meningitis, and Stroke. Speaking, breathing, movement, mood, and memory are all impacted by Nervous system problems. A comprehensive treatment option is herbal medicine. Growing these significant herbs will increase the ecosystem's terrestrial diversity And aid in biodiversity preservation [1]. Nerve illnesses are Centella asiatica, Avena sativa, Lagenaria sicerana, Cassia tora, and Cassia fistula. A taxonomy Categorization can be constructed based on medical applications and the Relationships inferred between the many medicinal plant species' biochemical Attributes and medicinal purposes. Additionally to molecular characterisation, Tissue culture studies Do this. The most potent medicinal plant used to treat Nervous disorders can be obtained, and significant medicinal plant gene flow will Increase terrestrial biodiversity [2].*

Keywords: Nervous disorders; Medicinal plants; Biodiversity; Ethnobotany; Mental illness

I. INTRODUCTION

The majority of people rely on traditional medicine for their primary healthcare, Yet many neurological disorders are not seen as common ailments and many People with mental illnesses. Epilepsy suffers greatly from stigma and Discrimination associated to health. The most prevalent severe chronic braai Condition, epilepsy is thought to impact at least 10 million people. Others, such as Stroke, meningitis, Parkinson's, and Alzheimer's. Speaking, breathing, Movement, mood, and memory are all impacted by nervous system problems. The brain and spinal cord are both affected by neurological diseases [3]. Some of The significant plants used in the treatment of The country's extremely rich natural Resources can be enhanced with the help of ethnomedicine and Ethnopharmacology [4]. The knowledge already in existence. It is thought that Research in the fields of ethnomedicine and ethnopharmacology is necessary to Understand the therapeutic capabilities of plants for the treatment of neurologic Illnesses. [5]. Ethnomedicine and ethnopharmacology research can be used to find Treatments for neurological illnesses using medicinal plants that have these traits. [6]. Tissues with medicinal significance affect the body physiologically. Essential Oils, fatty oils, mucilages, tannins, gums, glucosides, and alkaloids (in the forms Of C,H,O,N) are all present in the trees. It has been a long-standing tradition to Use plants to treat human illnesses [7]. This research can assist in discovering the Active substances in numerous plants as well as their modes of action. This may yield encouraging results. There has been a recent resurgence of interest. It shows Worry over the potential loss of important knowledge regarding medicine. Numerous studies have been done on the neurological activities and modes of Action of medicinal herbs. Studying medicinal herbs is crucial because the Majority of the population relies on traditional medicine for their primary Healthcare [8]. The investigation will increase the likelihood of finding the Composition for the treatment because plants have the power to cure diseases.

II. REVIEW

RAUWOLFIA SERPENTINE L(BENTH) EX AND KURZAEGLE MARMELOS L



Fig.1.1 RAUWOLFIA SERPENTINE L(BENTH) EX AND KURZAEGLE MARMELOS L

The rauwolfian Humans use root to cure both hypertension and mental illness. It issued To treat anxiety and other central nervous system disorders and elation [8]. It is used to Treat aggression, mental illnesses, and insomnia. It eases anxiety, anger, and hostility While calming the central nervous system. It is applicable to the treatment for epilepsy, Schizophrenia, It is used to treat aggression, mental illnesses, and insomnia. It eases Anxiety, anger, and hostility while calming the central nervous system. It is applicable To the treatment for epilepsy, schizophrenia, psychosis, and other mental illnesses[9]. Both the Eastern and Western Ghats contain it. Desperpidine, indobine, reserpine, and Serpentine are some of the significant chemicals found in the plant. The medicinal Potential of Rauwolfia serpentina is enormous [10]. psychosis, and other mental Illnesses [9]. Both the Eastern and Western Ghats contain it. Desperpidine, indobine, reserpine, and serpentine are some of the significant chemicals found in the plant. The medicinal potential of Rauwolfia serpentina is enormous [10]. Numerous studies have demonstrated the presence of flavonoids in Aegle marmelos, which are responsible for the anxiolytic action via benzodiazepine receptors. Therefore, the anti-anxiety function of Aegle marmelos may be due to its flavonoid content. Studies on Aegle marmelos have revealed the presence of other phytochemicals besides flavonoids, including tannic acid, phenols, marmesinin, ascorbic acid, eugenol, skimmianine, and saponin, among others, which may have calming effects. For the treatment of a variety of anxiety disorders, egle marmelos is a potentially helpful and safe medication. The fruit contains alkaloids, steroids, and coumarin. Sri Lanka is where this plant is located. Active substances are also present in the leaves. Aegeline, one of the active substances, marmelosine, furocoumarins. It has enormous potential for use in medicine [11].

ROSMARINUS OFFICINALIS L



Fig 1.2 Rosmarinus Officinalis L

Folk medicine uses Rosmarinus officinalis L. for a number of therapeutic purposes, Including the treatment or management of a wide range of illnesses, including Depression. The example of this Plant is that the acute treatment of mice with the Extract decreased the immobility time swimmin' test and tail suspension test in mmice Compared to a control, suggesting that the R. officinalis extract produced Antidepressant-like effect. The results that demonstrate the mechanism of action Indicate that R. officinalis's antidepressant effect is mediated by an interaction with The monoaminergic system and that further research into this plant's potential asana Alternative therapeutic strategy for the treatment of depression is necessary [12]. (Rosemary Danielle) Recent studies have demonstrated that diterpenes can Prevent neuronal cell death brought on by a range of substances, both in vitro and in Vivo. It is described how the

chemicals have multiple functions, ranging from broad antioxidant-mediated neuronal protection to other focused mechanisms like brain Inflammation and amyloid beta production. In Africa, you can find it. Rosmarinic acid, Betulinic acid, and carnosic acid are some of the substances that are active. *Rosmarinus Officinalis* leaves and *Lavandula officinalis* flowers. In traditional Moroccan medicine, They have been used as a medication to treat nervous disorders [13–18]. We use a Battery of tests to determine whether the essential oils from the leaves of *R. officinalis* And the flowers of *L. officinalis* have any psychoactive effects on the central nervous System of behavioural psychopharmacology examinations. GC was used to Characterise the hydrodistillation-extracted essential oil. – MS. *R. officinalis* contained. The following compounds: 1,8-cineole (50.49%), -pinene (15.82%), camphene (11.6%), -pinene (4.75%), myrcene (1.70%), p-cymene (2.16%), borneol (2.58%), and Borneol acetate (2.08%). However, there are nine different components in lavender Oil, of which 1,8-cineole (5.30%), linalool (44.67%), camphor (6.02%), and linalyl Acetate (42.00%) were found. Compared to the reference drug diazepam, the Intraperitoneal administration of *L. officinalis* essential oil to mice at doses of 300 and 600 mg/kg i.p. results in strong sedative effects, and doses of 1000 and 1500 mg/kg Result in hypnotic effects.

EVOLVULUS ALSINOIDES L & AVENA SATIVA L & DATURA METEL L



Fig 1.3 Evolvulus Alsinoides L & Avena Sativa L & Datura Metel L

The 2,3,4-trihydroxy-3-methylbutyl 3-2 propeonate and 1,3-di-O-caffeoyl-derived n-BuOH soluble fraction were two novel compounds whose purification was directed by Bioactivity. Caffeic acid, 6-methoxy-7-O-beta-glucopyranoside coumarin, 2-C-Methyl erythritol, and kaempferol-7-O-beta-glucopyranoside are six of the known Chemicals found in quinic acid methyl ester. While known compounds were confirmed By direct comparison of their NMR data with those reported in literature, new Compounds' structures were clarified via spectroscopic investigation. This is the first Account of phenolic compounds being present in *Evolvulus alsinoides* [12]. *Evolvulus* Is a powerful nootropic drug that is mostly used to treat epilepsy, insomnia, and Memory loss. (Anupama,2016). The separated compounds were examined for their Capacity to reduce stress in Male adult Sprague-Dawley rats underwent biochemical Alterations as a result of acute stress. Plasma levels of corticosterone, creatine kinase, Glucose, and adrenal gland weight have all increased significantly as a result of stress Exposure. The substances' ability to normalise hyperglycemia, plasma corticosterone, and adrenal hypertrophy showed them to have the most anti-stress effects. In East Asia, You can find it. The entire plant is employed as a medicine. Scopoletin, umbelliferone, And scopolin are the substances it contains. The compound has the chemical formula 2 Methyl-1,2,3,4-butanetetrol. *Alsinoides Evolvulus* In general, all groups of rats and AD-induced rats in particular, showed positive stimulatory effects of (EAE) extract on The cholinergic system [19–22]. The primary uses of *avena sativa* are for neurological And spasmodic illnesses that cause tiredness. Cardiac weakness, spermatorrhea issues, And the neurological deterioration associated with convalescence *Avena sativa* Homeopathy's typical side effects. Totho Shastho Homeopathic *Avena sativa* Selectively affects the nerve system of the genitor-urinary apparatus in male function Neurasthenia. Due to its ability to selectively affect the entire neurological system, Which supplies the reproductive organs. Using this remedy, it is simple to get rid of The nervous heart palpitations, insomnia, nervous agitation, mental weakness or Failure, and overall debility brought on by masturbation. In Europe, one can find it. The entire plant and seed are crucial. The chemical components are ascorbic acid, Amino acids, and alkaloids [23]. It was effective to create and pick interspecific *Datura* Hybrids with significant scopolamine production. Tropane alkaloids, which are present In 0.2-0.5% of *Datura metel*'s leaves, include seeds contain 0.2-0.5% and blooms 0.1-0.0%. A significant component of mature leaves is scopolamine. Hyoscyamine,

Norhyoscyamine, norscopolamine, hydroxyl-6-hyoscyamine, and metelodine are other Alkaloids. They speed up the heartbeat, cause smooth muscles to relax and motorinhibition to occur, decrease secretions, and enlarge eye pupils. Scopolamine and Hyoscyamine can be produced in vitro but it is not practical or profitable. The most Fruitful Datura metel cultures are those with hairy roots. Resources from Plants Afric (tropical). India is the home of it. The leaf is employed medicinally. Hyoscyamine, Atropine, and tropane alkaloids are all present [24].

ANNONASQUAMOSA L & ACOROS CALAMUS L & BACOPA MONNIERI (PENNEL)



Fig 1.4 ANNONASQUAMOSA L & ACOROS CALAMUS L & BACOPA MONNIERI L(PENNEL))

The effects of the ethanol extract of Annona diversifolia leaves include some neuropharmacological. Administration of the extract intraperitoneally postponed the onset of of petylenetetrazole-induced clonic seizures and the length of time in the rota-red and swimming tests. Additionally, the extract lengthened the amount of time spent sleeping after taking sodium pentobarbital. These findings suggest that the central nervous system is depressed by the ethanol extract of A. diversifolia leaves [25]. Long valued as a rejuvenator for the brain and nervous system, acorus calamus roots and rhizomes have been used in Indian traditional medicine for hundreds of years. Alpha and beta asarone, two compounds found in the rhizomes of Acorus calamus, have a wide range of pharmacological effects, including sedative, CNS depressant, behavior-modifying, anticonvulsant, acetyl cholinesterase inhibitory, and memory improving effects. You can find it in Central Asia. We use the roots, stems, and leaves. Eugenol, alpha and beta asarone are the chemical components [26]. Numerous research have recommended showing in animals, Bacopa monnieri extracts provide protective benefits neurodegeneration models the extract and herbal supplement has an impact on brain health, memory, and anxiety. It is also employed in Alzheimer's illness, epilepsy, nootropics, and memory improvement. It alleviates anxiety and attention deficit disorders of hyperactivity. In healthy older study participants, the whole plant standardised dry extract impacts safety and tolerability and has a role. The study adds further information evidence that it might safely improve cognitive function in the elderly [27].

FERA ASAFOETIDA L & EMBILICA OFFICINALIS L & VALERIANA



Fig 1.5 Fera Asafoetida L & Embilica Officinalis L & Valeriana

In both animal models and people, the oleo gum resin of *Ferula asafoetida* has recently been discovered to exhibit neuroprotective effects. (Asma K, 2015). There has been use of *asafoetida* as a stimulant and sedative. It is frequently employed in Indian medical systems like Ayurveda. Particularly in the Unani medical system, *asafoetida* has long been regarded highly among indigenous remedies [28,29]. Both Saudi Arabia and Nepal are home to it. The root, rhizome, and dried latex are used. It enhanced life span by 52.9% when administered orally to albino rats and mice in tests. Ferulic acid and carbohydrates are the ingredients that are active. Memory loss, mental tiredness, anxiety with agitation and restlessness, and depression with hostility are all treated well by *embilica officinalis*. Attention deficit hyperactivity disorder, responses. Amla is beneficial for the following medical disorders; Memory loss, mental weariness, vertigo, and headaches with a burning feeling are all symptoms of the brain and nerves. Psychological illnesses include sleeplessness, intense mental agitation, depression with aggressive behaviours, and anxiety with these symptoms. Fruits both fresh and dried are utilised. Sedation can be produced by valerian extract via raising GABA levels in the brain. GABA is an inhibitory neurotransmitter that, when present in high enough concentrations, has sedative properties. suggests that valerian extract may release GABA from brain nerve endings and then prevent GABA from being taken up by nerve cells, according to an in vitro study. Additionally, Valerian's valerenic acid blocks a GABA-destructing enzyme. another way in which Valerian might raise GABA levels and encourage a restful night's sleep. Gamma aminobutyric acid (GABA), a substance that is present in the brain in greater amounts, is thought to be increased by valerian root, according to research. GABA reduces anxiety and aids in nerve cell regulation [30]. A study examined how much anxiety and how much sleep male albino mice got when given *Cassia fistula*. Fruit extract in aqueous form lengthened slumber and mice with lower anxiety levels. Investigations have uncovered a variety of biological processes, including *Cassia occidentalis*'s antidepressant properties. Additionally, *Cassia fistula* leaf poultices are used externally for gout, rheumatism, paralysis, and fascial massage in brain disorders. East Asia is where it is found. They use the buds and dried, immature fruits [31].

PAPAVER SOMNIFERUM L & STRYCHNOS NUX VOMICA L & HYOSCYAMUS NIGER L



Fig 1.6 *Papaver Somniferum L* & *Strychnos Nux Vomica* & *Niger L*.

Opium and poppy seeds are sourced from a plant species called *Papaver somniferum*. Natural and semi-synthetic drugs are produced there. It's the origin of a number of benzyloquinoline alkaloids used in pharmaceutical products, such as sanguinarine, codeine, and morphine. Three times as much codeine was accumulated by the hairy root cultures as by the intact roots. Although narcotics are clinically used to manage pain, they also affect mood and behaviour much. In the mode of action are 2 enzymes and their genes. It can be found in the Mediterranean area. Papaverine, noscapine, and oripavine are the active ingredients [32]. Plant called *Nux vomica*. Medicine is made from the seed. Depression and nerve problems are treated with it. Two primary alkaloids are present in the dried seeds of *Nux vomica*: *Strychnia Brucia*, too. People who are stressed or engaged in mental work can benefit from it. South East Asia is where you can find it. Bark is employed. The compound that is active is *brucine* [33]. Epilepsy, meningitis, and dementia are among the conditions for which *Hyoscyamus niger* is used. *Hyoscyamus* is a treatment with certain recurring psychological and emotional themes. via all of its different manifestations [34]. In Europe, one can find it. It is an analgesic and sedative. *Hyoscyamine*, *scopolamine*, and *tropane* alkaloids are the active ingredients.

PANAX GINSENG OKEN & ACONITUM & LORANTHUS LONGIFOLIA JACQ



Fig 1.6 Panax Ginseng Oken & Aconitum & Loranthus Longifolia Jacq

A well-liked remedy has been Panax ginseng root. Neuroprotective ginsenosides are present. This evaluation takes into account articles addressing the varied activities of *P. ginseng* that may have neurotherapeutic benefits for neurological illnesses and neurodegenerative diseases such Parkinson's disease, Alzheimer's disease, Huntington's disease, amyotrophic lateral sclerosis, and multiple sclerosis. Since more than 2000 years ago, ginseng has been used as a traditional modern remedy. It is known to have calming, mood-lifting, and cognitive-improving effects. The discussion includes beta amyloid formation, major depressive disorder, and Parkinson's disease as well as the molecular mechanisms of ginseng's neuroprotective effects on Alzheimer's disease. Korea and Russia both have it. Multivitamins are present [35]. One of the finest treatments for intense anxiety or panic is aconite. At an elevation of roughly 3600 metres, it is wild in Kashmir and Nepal's alpine Himalayas. Root is employed for anxious dropsy, neuralgia, and as a sedative. The alkaloids pseudoaconitine, chasmaconitine, indaconitine, and bikhaconitine are present in pure roots. The di-ester alkaloids aconitin, mesaconitin, and hyaconitin are what give the medication its effectiveness [36]. Rats' central nervous systems are shielded from electromagnetic radiation by *Loranthus longifolia*. It has been used extensively to treat illnesses of the brain, particularly China's South West. As a result, the current neuroprotection model was created to examine its neuroprotective abilities against oxidative stress caused by hydrogen peroxide in NG-108-15 cells. [37] [9:08 am, 12/12/2022] +91 82082 46267: The generic name *Loranthus* has a convoluted taxonomic history. The type species for the genus *Loranthus* was *Loranthus americanus*, which was given the name in 1753 by Carl Linnaeus. Later, he added additional species, including *Loranthus europaeus* in 1763, a name first used by Jacquin in 1762, and *Loranthus scurrula* in 1762, a species he had previously classified in a separate genus, *Scurrula*. [9:08 am, 12/12/2022] +91 82082 46267: A genus of parasitic plants called *Loranthus* develops on the limbs of wooden trees. It is a member of the flamboyant mistletoe family, the *Loranthaceae*. Although some species have switched to unisexual flowers, the majority of prior systematic treatments include all mistletoe species with bisexual blooms. Other methods limit the genus to a small number of species. It's unclear exactly where *Loranthus* fits into the system.[38]

III. CONCLUSION

The preservation of medicine plant resources may benefit from the use of certain genera, such as *Cassia*. Such classification could aid in the further identification of medicinal plants and the manufacture of drugs. Replacement, as well as to organise our understanding of medicinal herbs. Breaking up drug plants into families and diseases would standardise the survey and structure-based grouping of helpful plants. The variety of a plant species is proportionate to its medicinal usage, and there are some geographical areas of the world that are likely to provide useful information on disease incidence/distribution and variance in the pattern of plant use. Tissues with medicinal significance affect the body physiologically. You can utilise glucosides and alkaloids [39]. A taxonomy categorization can be constructed based on therapeutic applications and the biochemical relationships gained from the study of many plant kinds using biochemical parameters. Tissue All the species need to be molecularly characterised and the results of culture experiments conducted. The above-mentioned plants' significant germplasm will increase the diversity of terrestrial life, and it will be possible to acquire the best medicinal plant for treating mental disorders. Model animals will be used to study the active chemicals, and their efficacy when paired with one another can improve future research and possibilities.

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