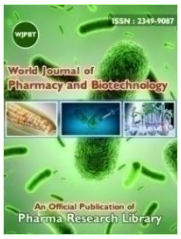

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A Review Article on Herbal Plants with Anti-Epileptic Activity

Ranjitsingh B.Rathor*[1], Sheetal C.Raghuvanshi[2], Dr. Pavan Narkhede[3], Tanmay Dongaonkar[4]
[1]Faculty of Pharmacy, Department of Pharmacognosy, Samarth College of Pharmacy, Deulgaon Raja, Chikhali Road, Buldhana, Maharashtra-443204
[2]Faculty of Pharmacy, Dept. of Pharmaceutical Analysis, Samarth College of Pharmacy, Deulgaon Raja, Chikhali Road, Buldhana, Maharashtra-443204
[3]Faculty of Pharmacy, Department of Pharmaceutics, Samarth College of Pharmacy, Deulgaon Raja, Chikhali Road, Buldhana, Maharashtra -443204
[4]Faculty of Pharmacy, Dept. of Pharmaceutical Chemistry, Samarth College of Pharmacy, Deulgaon Raja, Chikhali Road, Buldhana, Maharashtra- 443204

A B S T R A C T

Whenever there is a discussion on medicines, medicinal world, and healthcare system. The total earth planet consider as a source of medicines as this is full of flora and fauna though the historical evidences was available and there is claim that for every disease related with human being, animal, birds health. As everyone depend upon natural sources with numbers of natural therapies for ultimate results of health problems. As progression in civilization human attracted toward how to use these natural gifts for curing numbers of health case and still going on with new other advanced techniques. Right from the discovery of antibiotics in modern era to the approaches for synthesis of different molecules. But still there are so many ailments with human being like Epilepsy for that their no perfect remaidy from synthetic drugs. In that case all medicinal professionals once again searching and hopeful for the plants for having Anti-Epileptic Activity. Here we are taken effort to assemble some herbal plants, animals with anti-epileptic potential where these drugs should be in lime light for a common person who cannot manage the heavy cost and expenditure of epilepsy disease. These herbal drugs might be a source for treatment of epilepsy disorder in every way.

Keywords: flora, animal, healthcare system, Epilepsy, Anti-Epileptic Activity

A R T I C L E I N F O

***Corresponding Author:**
Ranjitsingh B.Rathor
Faculty of Pharmacy
Department of Pharmacognosy,
Samarth College of Pharmacy, Buldhana, Maharashtra-443204.

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1. Introduction

Epilepsy is a central nervous system (neurological disorder) in which the brain activity becomes abnormal causing seizures or period of unusual behavior, sensation and sometimes loss of awareness. Basically the brain health depends upon the mechanism of neurons which is basic unit of nervous system. The normal functioning of a brain and bran pats like cerebrum, cerebellum, brain stem, four lobes consist of (parietal, occipital, temporal, frontal lobes) depend upon a good co-ordination, coopration and link up of neurons with each other. The brain consist of lots of chemicals in the form of neurotransmitters ,hormones like serotonin, doamne, endorphins, oxytocins, norehinephine, gama amino butyric acid, glutamate, adrenaline, acetylcholine, adrenal, melatonin. Among of these nonadrenaline, gonadotrophin, serotonin, consider as a bran stimulating neurotransmitters

2. Epilepsy types

Epilepsy is a condition that causes repeated seizures, which happen because of unusual electrical activity in the brain. There are many types of epilepsy, each with its own symptoms. Knowing your specific type can help you and

your doctor better understand what to expect with seizures, how your condition might affect learning or development, and what treatment options are available. If you've ever wondered, "Are there different types of epilepsy?" or "How many types of epilepsy are there?" you're not alone. Here are the answers you need. There are three major categories of seizures. Other types of epilepsy are known as syndromes, which are collections of specific signs and symptoms that point to a certain medical condition. The three categories of epilepsy are:

- Focal epilepsies — these are defined by the area of the brain where the seizures begin, with abnormal electrical activity starting in a specific region.
- Generalized epilepsies — in these cases, seizures don't start or stay within one area of the brain. One common type, idiopathic generalized epilepsy, accounts for about one-third of cases.
- Unknown epilepsies for these types, health care providers are unsure about where the seizures originate.

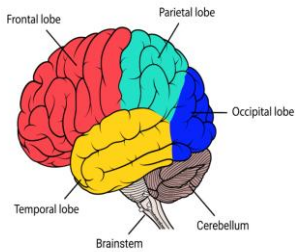
Each type of epilepsy has unique characteristics. Some syndromes are considered benign, meaning children will eventually become seizure-free as they grow older, while other types of epilepsy are lifelong. Read on to learn more about 11 types of epilepsy.

1. Temporal Lobe Epilepsy

Approximately 60 percent of people with focal epilepsy have temporal lobe epilepsy (TLE), or seizures that originate in the brain's temporal lobe. The temporal lobe is located on the sides of the brain, near the ears, and is responsible for processing sound and language, as well as memories relating to sound and vision. About one-third of TLE or other cases of focal epilepsy are resistant to antiepileptic drugs (AEDs). Doctors might suggest surgery to remove part of the brain, or they might use special devices, such as vagus nerve stimulation, to help treat the problem.

2. Frontal Lobe Epilepsy

Frontal lobe epilepsy is the second most common form of focal epilepsy. This type may be either inherited or caused by a structural problem such as a birth defect, an abnormal blood vessel, trauma, or scarring caused by infection. In about 50 percent of FLE cases, no cause is ever determined.



3. Occipital Lobe Epilepsy

The occipital lobes, located in the back of the brain, are primarily responsible for vision. Occipital lobe epilepsy, a type of focal epilepsy, is less common than TLE and FLE. The cause of seizures that begin in the occipital lobes is often unknown. AEDs are usually the first treatment option, though surgery may help if medications aren't successful.

4. Parietal Lobe Epilepsy

The parietal lobes are located on the top and upper sides of the head. This area is known as the "association cortex" because it's where perception becomes reality — sounds are recognized as words, visual images are formed, and touch is associated with an object. Focal epilepsy originating in the parietal lobe is much less common than TLE and FLE. Seizures that begin in the parietal lobes usually don't have a known cause. AEDs are the first treatment option. If medication fails, surgery may be recommended.

5. Panayiotopoulos Syndrome

Also known as early onset occipital epilepsy, Panayiotopoulos syndrome (PS) usually starts between 3 and 10 years of age. Its cause is unknown, but as many as 6 percent of children who have non febrile seizures have this type of focal epilepsy.

6. Benign Rolandic Epilepsy

Benign rolandic epilepsy (BRE) also known as benign epilepsy with centrotemporal spikes usually begins around ages 6 to 8 years. Boys are slightly more likely to have BRE than girls are, according to Johns Hopkins Medicine. BRE accounts for about 15 percent of all epilepsies in children.

7. Childhood Absence Epilepsy

Childhood absence epilepsy (CAE) accounts for 2 percent to 8 percent of childhood epilepsy cases. This generalized epilepsy typically begins between ages 3 and 11, most frequently between ages 5 and 8. One-third of children with CAE have a family history of seizures, suggesting that this may be one of the types of genetic epilepsy. Siblings of children with CAE have a 10 percent chance of developing epilepsy. Children with CAE experience absence seizures (formerly known as petit mal seizures) that often occur during exercise. The child isn't aware or responsive during seizures and may stare, blink, or roll their eyes upward. You may notice them making a chewing motion or other repetitive movements. Seizures usually last less than 15 seconds, after which the child immediately returns to normal. The child usually isn't aware that they had a seizure. Seizures may be infrequent or happen as often as 100 times a day. Some children with CAE have concentration and memory problems before seizures start. Rarely, children who have very frequent seizures develop learning difficulties. At least two-thirds of children with childhood absence epilepsy respond to treatment, and their seizures will end by midadolescence. If AEDs aren't effective, the ketogenic diet may help. However, 10 percent to 15 percent of children with CAE will develop other seizure types during adolescence typically, myoclinic seizures, (myoclinic meaning short periods of jerking movements), generalized tonic-clonic seizures (formerly known as grand mal seizures), or both.

8. Juvenile Myoclinic Epilepsy:

JME, also known as Janz syndrome, is another of the childhood epilepsy types and the most common generalized epilepsy syndrome. This syndrome tends to begin between ages 6 and 26, usually between 12 and 16. Mild myoclinic, generalized tonic-clonic, and clonic-tonic-clonic seizures are the most common types of JME. Myoclinic seizures

tend to occur immediately upon waking in the morning. People with JME may first experience absence seizures, although this type happens less often. Photosensitivity (seizures triggered by flashing or flickering light) affects more than one-third of people with JME.

9. Juvenile Absence Epilepsy

Juvenile absence epilepsy (JAE) is similar to childhood absence epilepsy. However, it starts later in childhood (generally between ages 10 and 16) and is usually a lifelong condition. Between 1 percent and 2 percent of people with epilepsy have juvenile absence epilepsy. Although it's rare to have a family history of seizures, the cause of JAE is thought to be genetic.

10. Lennox-Gas taut Syndrome

Lennox-Gastaut syndrome (LGS) is an uncommon generalized epilepsy syndrome, occurring in 3 percent to 4 percent of children with epilepsy. LGS affects males somewhat more often than females, according to the National Organization for Rare Disorders (NORD), and generally starts between ages of 2 and 7.

11. Progressive Myoclonic Epilepsies

The progressive myoclinic epilepsies are a group of rare syndromes and types of epilepsy characterized by a combination of tonic-clonic and myoclinic seizures. Disorders that fall under this category include:

- Lafora disease
- Mitochondrial encephalopathies
- Unverricht-Lundborg disease (also known as Baltic myoclonus)
- Severe myoclinic epilepsy of infancy (also referred to as Dravet syndrome)

Progressive myoclinic epilepsies start at different ages, depending on the specific condition. The cause is often hereditary but may be unknown. Seizures in progressive myoclinic epilepsies are hard to control. As the condition progresses, people with PME develop cognitive (thinking and memory) and motor (movement) disabilities. Medications may be successful at first, but effectiveness declines over months or years as the disease progresses.

Challenges Faced by People Living with Epilepsy

No matter the type of epilepsy, it can bring difficulties beyond the seizures themselves. Epilepsy can affect mood, disrupt sleep, affect social interactions, lead to thinking and memory problems, cause bone health issues, and, in some cases, increase the risk of early death. If any of these common challenges are affecting you or your child, talk to a health care provider to explore your treatment options. So here we are trying to introduce some common plants which are easily available in INDIA and surrounding to us .the common person can easily collect it and used for a person suffering from any type of epilepsy as well as a patients. So these plants can boost the health and help in treatment of epilepsy.

Turmeric Rhizome

Synonyms: Curcuma, Indian saffron, Haldi

Biological source: it consists of fresh as well as dried rhizomes obtained from the plant *Curcuma Longa Linn*. And *Curcuma Domstica Val.*

Family: - Zingiberaceae

Chemical constituents:

Curcumin, resins, volatile oils as tumerone, Zingiberene, borneol, starch, Gingerols, shogaols, phenolic ketone derivatives.

Therapeutic uses:

In treatment of epilepsy, As a antiseptic, an expectorant, anti-inflammatory, as contidiment and spices, as an colouring agent, in ointment and creams

Mechanism of anticonvulsant effects of ginger:

may attribute to antioxidant mechanisms, oxidative stress inhibition, calcium channels blockade, inhibiting NO production and reduces iNOS in lip polysaccharide-stimulated mouse macrophages, levating intracellular cGMP level, and inhibiting chloride ion channel in the complex of $GABA_A$ receptors The antioxidant ingredients in ginger include gingerols, shogaols and some phenolic ketone derivatives.

Ginseng

Synonyms: Panax, ninjin, ginseng root, Asiatic ginseng

Biological source: - it consist of dried roots of *Panax Ginseng, Panax quinquefolium*

Family: - araliaceae

Chemical constituents:

Triterpenes Saponins, carbohydrates, fatty acids, protopanaxadiol, polysaccharides, polyacytelenes, Sesquiterpenes, flavonoids, lignans, proanthocyanidins, polyphenol,

Uses: As an adaptogen to adapt stress, improving stamina and concentration, normalizing restorative effect, widely used as aphrodisiac, as a dietary supplement

Ginko Biloba

Synonyms: maidenhair tree, Japanese temple tree

Biological source: herb consists of dred *leaves of Ginko biloba L.*

Family: Ginkoaceae

Chemical constituents: Flavonoids, proanthocyanidins, dterpenes, ginkolides, quecitinmonocides, biocides, triosides, sesqueterpenes

Uses: Power full antioxidant, anti-inflammatory, cardio tonic, reduce anxiety, improove brain function well being

Mechanism of Action:

Improves blood circulation, reinforces the walls of the capillaries, discourages clot formation, and protects nerve cells from harm when devoid of oxygen.

Passion Flower

Synonym: Passiflora incarnata, maypop, purple passion flower, true passion flower, wild apricot.

Biological source: it consist of dried aerial parts of perennial plant *passiflora incarnata* including the flowers and fruits

Family: passifloraceae

Chemical constituents: falvanoids, phenols, alkaloids, tannins, glycosyl flavonoids, maltol, vitexincoumerin, umbelliferone, glycosides, terpens, Saponins, resins

Uses:

antioxidant, axiolytic dietery supplement, sedative, in heart rhythem, menopausal symptoms, attention deficit hyperactivity disorders, on skin burns and in treatment of hemorrhoids, seizures, and hysteria.

Mechanism of action: -

Its antiepileptic activity occurs due to interaction with GABA

(Gamma amino butyric acid) and likely by enhancing the activity of GABA an inhibitory neurotransmitter which result in a calming effect in the brain potentially reducing the likelyhood of seizures by action on opoids receptors.

Grapes

Synonyms: angoor, draksha, munthiri, titatcai

Biological source: - berries of the deciduous woody plant of *vitis vinifera*

Family: Vitaceae

Chemical constituents:

Phenolic compounds such as hydroxycinnamic acids, Anthocyanins, proanthocyanidins and stilbenes proteins, lipids, carbohydrates, minerals, and vitamin

Uses: Anti-convulsant, anti-oxidant, antidiaberic, anticancer, cardoprotective, hepatoprotectve, Anti-inflammatory, analgesic, sedative.

Honey

Synonym: madhu, madh, purified honey

Biological source- It is collected by honey bees ***Apies Mellifera*** and stored in a colony of honey comb.

Family: Apidae

Chemical Consttuents:

Fructose (38%) and glucose (31%) as major sugars. Besides fructose and glucose, maltose, sucrose, maltulose, turanose, iso maltose, laminaribiose, nigerose, kojibiose, gentiobiose, and B-trehalose. Trisaccharides include maltotriose, erlose, melezitose, centose 3-a5, isomaltosylglucose, l-kestose, isomaltotriose, panose, isopanose, and theanderose. The minor volume of vitamins includes riboflavin, niacin, folic acid, pantothenic acid, vitamin B6, and ascorbic acid. Different trace elements cover calcium, iron, zinc, potassium, phosphorus, magnesium, selenium, chromium, and manganese. Some of the flavonoids and phenolic compounds that have been identified in honey include kaempferol, quersestin, chrysin, pinobanksin, luteolin, apigenin, pinocembrin, genistein, hesperetin, *p*-coumaric acid, naringenin, gallic acid, ferulic acid, ellagic acid, syringic acid, vanillic acid, and caffeic acid

Uses:

- Healing wounds and burnas
- Preventing acid reflux
- Fighting infections
- Reliving cold and cough
- Hiccups, stress, weakness bed wetting and frequent urination bad breath
- The effects of hangovers teething pain in babies older than 1 year
- Eczema and dermatitis burns, cuts, and wounds
- Coughs and asthma sleep disturbances
- Vision problems stomach ulcers diarrhea and dysentery
- vomiting high blood pressure, obesity Jaundice ,arthritis
- In treatment of various skin ailments, citing honey's antibacterial, antiviral, anti-inflammatory, and antioxidant properties

Primose Oil

Synonyms: oenothera oil, primula oil, sundrop oil, king's cureall oil, Biological source: oil obtained from the fresh seeds of ***Oenothera biennis***

Family: - onagraceae

Chemical constituents:

Linoleic acid, gamma-linolenic acid (GLA), omega-6 fatty acids, Oleic Acid (Omega-9), Palmitic Acid, and Stearic Acid. fat-soluble vitamins — including vitamin A, vitamin D, vitamin E and vitamin K.

Uses:

- Anti-convulsant effect
- In treatment of eczema, reduce tretinoin side effect

- In diabetic neuropathy
- In management of menopause. It seems to make women's happier and less stressed.
- This oil also be good for new moms who feel sad after having a baby.
- Antiexienty or mental fatigue.
- It's anti-inflammatory.

Goldenseal Plant

Synonyms: Hydrastis trifolia. Warnera canadensis. Warnera diphylla. Warnera tinctoria

Biological source: it consist of fresh flowers and seeds of ***hydrastis Canadensis***.

Family: - Ranunculaceae

Chemical constituents

The plant goldenseal is the rich sources of alkaloid, the roots and rhizomes of goldenseal contain three major alkaloids including berberine, hydrastine and canadine, flavonoids, fu phenolic acid derivatives.

Uses:

1) Goldenseal used in treating disorders of the digestive system and mucous membranes.

- Extremely useful in the treatment of habitual constipation, antiperiodic, antiseptic, astringent, cholagogue, diuretic, laxative, stomachic, tonic.
- It is used mainly in the treatment of disorders affecting the ears, eyes, throat, nose, stomach, intestines and vagina.
- Antibacterial (effective against broad-spectrum bacteria and protozoa, it increases bile secretions
- Acts as an anticonvulsant, a mild sedative and lowers blood pressure.

Wormwood

Synonym: dansy, southernwood, gall, acrimony, sagewort

Botanical name: It consist of entire herb of *Artemisia nilagrica*

Family: asteraceae

Chemical constituents:

It mainly include phenylpropanoid, terpenoids, lignans, flavonoids, alkaloids, amides, organic acids,

Uses:

Dried rhizomes of wormwood medicinal parts and these have been commonly used alone or combined with various formulations to treat stroke, dementia, depression, seizure, and mental disorders for centuries

Wormwood have potent properties, such as antidepressant, antiepileptic, anticonvulsant, antianxiety, antifatigue, antifungal properties, and they have been shown to improve Alzheimer's disease

According to the traditional literature and contemporary evidence, the present research status of wormwood was critically reviewed. Nowadays wormwood widely used in the treatment of brain diseases and nervous system diseases and has achieved satisfactory therapeutic effects

Mechanism of action

Wormwood can treat brain diseases, such as epilepsy, anxiety, and depression, by regulating neurotransmitter levels. It can also improve blood circulation in the brain to alleviate neurological diseases.

White Catechuess

Synonyms: white catechue, kath, gambir.

Biological source: it consist of entire plant of ***Urcarnia rhynchophylla***

Family: rubiaceae

Chemical constituents:

Proanthocyanidins, sterols, organic acids, oxindole and indole alkaloids, and Triterpenes, ajmalicine, campesterol, carboxyl alkyl esters, akuammigine, sitosterols, rutin, Chlorogenic acid, speciophylline, catechin, , corynoxeine, harman, daucosterol, epicatechin, hirsuteine, corynantheine, hirsutine, loganic acid, mitraphylline, iso-pteropodine, oleanolic acid, ursolic acid, lyaloside, rhynchophylline, palmitoleic acid, pteropodine quinovic acid glycosides, procyanidins, stigmasterol, 3,4-dehydro-5-carboxystrictosidine, vaccenic acid, uncaring A thru F, and strictosidines, rotundifoline, isorotundifolune, coumarins, flavonoids, quinovic acid glycosides.

Uses:

As a remedy for a wide range of ailments, including infections like cancer, gastric ulcers, arthritis, and inflammations. For blood purifications, as a wound wash following childbirth to promote skin healing, kidney cleansing, asthma, inhibition of multiple diseases, irregular menstruation and hemorrhages, fevers. It was also employed as a mental health therapy option -e.g., anxiety, insomnia, depression, seizures, and epilepsy.

Liquidambar orientalis

Common names: oriental sweet gum or Turkish sweet gum

Biological source: it consist of entire plant of *Liquidambar orientalis*

Genus: Liquidambar

Family: Hemamilediaceae

Foliage of *Liquidambar orientalis*

Chemicals: oils, balsam storax, hydrocarbon styrene, polystyrene plastics, Styrofoam.
Uses: Latex used as a medicine since the Hippocratic period.

The ancient Egyptians also used the oil during embalming. The extraction of its sap latex and the production of a balsam for production of benzoin, benzoic acid all other derivatives. The latex and its extract use for production of sweet gums. Latex byproduct in the form of oils used in Greek culture production of aromatic oils and perfumes and its part of their trade economic system in past.

Achyranthes aspera

Common names: chaff-flower, prickly chaff flower, devil's horsewhip, apāmārga
Biological source: It consist of entire plant of Achyranthes aspera
Family: Amaranthaceae.
Chemical constituents
It contains Triterpenoids, Saponins which possess oleanolic acid as the aglycone. Ecdysterone, an insect moulting hormone, and long chain alcohols
Uses: In treatment of dropsy, piles, boils, for colic pain children. As a cure for cough. Dara (antibodies in cancer growth) have been used in folk medicine in countries including Australia.[8]

The seeds are given in hydrophobia, and in cases of snake-bites, as well as in ophthalmic and cutaneous diseases. The flowering spikes, rubbed with a little sugar, are made into pills, and given internally to people bitten by mad dogs. The leaves, taken fresh and reduced to a pulp, are considered a good remedy when applied externally to the bites of scorpions. The flowering spikes are old safeguard against scorpions, which it is believed to cure paralysis.

Mango

Synonyms: Aam, aamba, mamidi, mampalam, maambhazam, badam aam
Biological source: consist of large fruiting tree of Magnifera indica
Family: Anacardiaceae
Chemical constituents:
Latex contained moderate amounts of carbohydrates and reducing sugars which are disaccharides. Starch, proteins, monoterpenes, phenolics, alkaloids, cardenolide, enzymes were present.
Uses

- In dressings for cracked feet and scabies. It is also considered anti-syphilitic, antifungal agent
- Food preservative, flavoring agent, antibacterial properties.
- Skin care: Mango sap can be used for skin whitening and other skin care treatments.
- Honey bee sting treatment: Mango sap can be used to treat honey bee stings.
- Enzymes: Mango sap contains enzymes that are beneficial to the body.
- Commercial applications: Mango sap is a rich source of enzymes that have several commercial applications.
- Aromatic agent: The non-aqueous phase of mango sap contains terpenoids that give raw mango its aroma.

Pisticia atlantica

Common name: Mt. Atlas mastic tree and as the Persian turpentine tree.
Biological source: It consist of entire plant and various parts of plant pisticia atlantica. Desf
Family: anacardeace
Uses:
Flavoring agent: The sap is dried and used as incense, and its smoke releases a pleasant smell to the local environment for celebrations and religious ceremonies, as "incense".

Semecarpus Anacardium

Synonyms: Marking Nut Tree, Marsh Nut, Oriental Cashew Nut, Bhela, Bhelwa, and Bhilawa. Malacca bean tree, marany nut, dhobi nut tree and varnish tree
Biological source: IT consist of dried fruits of *Semecarpus anacardium* linn
Family: Anacardiaceae
Phytoconstituents:
Sterols, 1, 2, dihydroxy-3(pentadecadienyl), benzene and, hydroxyl, pentadecadienyl, benzene, Flavonoids, polysaccharides, gums, amino acids, terpenoids, phenolics, Saponins
Uses: to aid in memory retention, antioxidant, antimicrobial, anticancer, in ulcers, treatment of gastritis,

anti-vomiting, antihypertensive, in treatment of dirrhoea, anti-arthritis.

Poinsettia

Synonyms: lalapatti, lobster flower, Easter flower, Christmas flower, painted flowers
Family: It consist of flowering tops of *Euphorbia Pulcherrima*
Family: Euphorbiace
Chemical composition
Alkaloids, flavonoids, Pulcherrol, Saponins, glycosides, reducing sugars, proteins, amino acids, pulcherryl acetate are among the components of its latex. Triterpenes, steroids are found in aerial parts of the plant, including its latex and leaves.
Uses: Anti-Alzheimer's disease bioactivity, analgesic,

Jackfruit latex

Synonyms: kathal, lagnka, jack, fanas
Biological source: latex obtained from the plant of *Atrocarpus Hetrophyllus*
Family: Moraceae
Phytochemicals: It contains lipids, rubbers, resins, sugars, enzymes, and proteins, including cis-1,4 polyisoprene and trans-1,4 polyisoprene, vitamins, minerals, fibers and fats.
Uses: Its decoction and latex are used in the treatment of asthma, prevent ringworm infection, and heal cracking of the feet, in the treatment of diabetes, gall stones and relieve asthma., mouth ulcer, in glandular swelling

Swastik

Common names: pinwheel flower, crape jasmine, East India rosebay, and Nero's crown
Biological source: Consist entire plant of ***Tabernaemontana divaricata***.
Family: Apocynaceae
The stem exudes a milky latex when broken, whence comes the name milk flower
Phytochemicals: phenols, alkaloids, Flavonoids, amino acids and proteins in the latex of T. divaricata. Elements were found in the latex, nitrogen was found in higher quantity followed by sulphur, potassium, phosphorus, manganese, iron and zinc. Copper was found to be very scarce
Uses: In eye diseases, ascaries, cancer, scabies, conjunctivitis, dirrhoea, anthelmintic, analgesic. Etc.

Thevetia

Synonyms: Pili Karen's, Yellow Oleander, Kaner, lucky nut, yellow oleander, milk bush
Biological source: - Ii is well developed ornamental shrub of thevetia purpurea
Family Apocynaceae
Phytochemicals: latex contains compounds that may have medicinal properties, including:
Flavonoids: Rutin, quersestin, naringin, and hesperidins
Phenolic acids: Chlorogenic, syringenic, and ferulic acids
Uses: as an anticancer, anticoagulant, antioxidant, antimicrobial agent, as a cardiac glycoside

Papya

Synonyms: papita, omkari, papai
Biological Source
Papain is the dried and purified latex of the green fruits and leaves of *Carica papaya* L
Family: Caricaceae

Chemical Constituents

- In papaya latex consist of cystine endow peptidases: Glycyl endopeptidase, chymopapain, and caricain
- Bioactive compounds: 2-Hydroxy-gamma-butyrolactone, 1, 3-propanediamine, hexadecanoic acid, octadecanoic acid are some of the bioactive compounds found in papaya latex.
- Papain contains several enzymes such as proteolytic enzymes, peptidase I capable of converting proteins into dipeptides and polypeptides, rennin-like enzyme, clotting enzyme similar to pectase and an enzyme having a feeble activity on fats
- The enzymes Papain, papayaproteinase, and chymopapain, have been isolated in crystalline form from the latex.
- The fruits yield lauric, myristoleic, palmitoleic and arachidic acids, malonated benzyl-p-o-glucosides, 2-phenyl ethyl glucoside, and 4-hydroxy-phenyl-2-ethyl glucoside. Alkaloids, alcohols, terpenoids, lipids.

Pharmaceutical industry:

Papain is used to prevent adhesions; in infected wounds; internally as protein digest ant as anathematic (nematode), to relieve the symptoms of episiotomy (incision of vulva). For treatment of dyspepsia, intestinal and gastric disorders, and diphtheria. For dissolving diphtheria membrane, in surgery to reduce incidence of blood clots where thromboplasma is undesirable and for local treatment of buccal, pharyngeal, and laryngeal disorders.

Opium

Synonyms: ganja, afeem, drugs, kani.

Boloical source: Opium (poppy tears) is dried latex obtained from the seed capsules of the opium poppy *Papaver somniferum.*

Opium is a highly addictive narcotic drug obtained from the juice (latex) of the unripe seedpod of the poppy plant (Papaver somniferum).

Family: papavaraceae

Phytochemicals:

Morphine, heroine, codeine, Noscapine. Hydromorphone, oxycodone, hydrocodone, papavarine.

Uses:

Medications for the treatment of acute and chronic pain. Opium and its alkaloid-derivatives can also be used as tranquilizers, antitussives and in the treatment of diarrhoea. Pain management: Morphine is commonly used to treat moderate to severe pain, and is often the first choice for palliative care.

Cancer treatment: Morphine can be used to treat pain during active cancer treatment.

Sickle cell crisis:

Morphine can be used to treat vaso-occlusive pain during sickle cell crisis. Labor analgesia: Morphine can be used for pain relief during labor.

Preoperative analgesia:

Morphine can be used for pain relief during surgery, including intra-abdominal, intra-thoracic, and orthopedic surgery of the lower extremities, and Cesarean section

Ipomoea staphylina

Synonyms

Pretty Morning Glory, Lesser Glory, Ugniumboo, Oonan kodi, Theendra teega, Sunang kodi, Unang kodi, Onaan kodi, and Ugina kodi.

Biological source: It consist of entire climber parts of *Ipomea Staphylina*

Family: Convolvulaceae

Chemical constituents:

Alkaloids, Flavonoids, glycosides, tannins, Saponins, phenols, carbohydrates, protein. Steroids, glycosides and sterols, Hexadecen-1-ol, 9-Octadecen-1-ol, Hydro peroxide, 1-ethylbutyl and 3, 3, 7, 11-Tetramethyltricyclo [5.4.0.0(4, 11)] undecan-1-ol were identified. Sitosteryl-3-O-β-D-glucoside and chiro deoxy inositol.

Medicinal properties

antimicrobial agents, food additive and flavoring agents, antioxidant, anticancer properties, Anti-hypercholesterolemia, anti-inflammatory agents, cytotoxic, cosmetics and perfumeries, hepatoprotective properties, antiviral properties, analgesic, insect pheromones, anesthetic, ant mutagenic, antispasmodic, choleretic, dermatitigenic, fungicide, herbicide, laxative, pesticide, lipoxygenase inhibitor, pesticide, tyrosinase inhibitor, vermifuge etc.

3. Plant latex uses

Plant latex is a rich source of pharmaceuticals, pesticides and immune allergens. It contains phytosterol, Flavonoids, acetogenins, alkaloids and phenols. In general, plant latex contains low-molecular weight compounds (previously referred to as secondary metabolites, such as alkaloids, Flavonoids, terpenoids) and macromolecular complexes, which are proteins. The plant latex compounds are responsible for numerous pharmacological properties of many plants like anti-tumors, anti-antigenic, anti-diabetic, anti-proliferative, anti-arthritis, anti-inflammatory, antioxidant, antiasthma tic, anti-fertility, analgesic, immunomodulation, wound healing, cytotoxicity, vasodilatory activities. Most of them show diverse biological activities against bacteria, fungi, viruses, protozoans, nematodes, insects, and tumor cells. They are also used as disinfectant, anticoagulant, anti-inflammatory, antioxidant and ant proliferative agents that provide protection in wounds (Ramos et al., 2019, Upadhyay, 2011, Zielinska et al., 2018). Latex contains also wide variety of industrially important metabolic substances which can be harvested, modified, quenched, and polymerized easily for making goods and materials (Agrawal and Konno, 2016, Konno, 2011, Ramos et al., 2019). In plants various latex ingredients may serve as anti-feedants, against insect herb ivory and play defensive role against pathogens. Latex is a milky fluid secreted by elongated cells called laticifers and flows inside them throughout leaves, stems, fruits and roots of some flowering plants. Most of the biomolecules (secondary metabolites or low-molecular compounds) present in latex are produced in the plastids and end plasmatic reticulum, and are later transported to the central vacuole. This is an organelle, where the lipophilic and hydrophilic compounds form an emulsion, typical for the latex. About 10% of flowering plants produce latex and they are found in over 40 families including, Papavaraceae, Euphorbiace, Apocynaceae, Caricaceae, Moraceae, Asclepidacae. Around 15–30% of plant species exude latex

in tropical Africa, and 20%–35% in tropical America (Amazon), comparing to 8.9% worldwide (Chavhan Bhagyashri, Hundiwale Jogendra, & Patil Avinash, 2015; Lewinsohn, 1991). One of the latex-bearing medicinal plants with high pharmacological potential is Greater Celandine (Chelidonium majus L.). It is a perennial herbaceous plant from Papavaraceae family growing wild in Europe, a part of Asia and in North America, where it was introduced (Fig. 1).

C. majus was known in traditional herbal medicine for its wide activities, like antimicrobial, antiviral, anticancer, anti-inflammatory, antiparasitic, antifungal, analgesic, antioxidant, fungistatic, choleretic, hepatoprotective, immunomodulatory (Arora and Sharma, 2013, Biswas, 2013, Gilca et al., 2010, Maji and Banerji, 2015, Zielinska et al., 2018, Zielinska et al., 2018). It was used to fight liver and biliary disorders, corns, eczema, tumors of the skin as internal tinctures, mixtures, fluids or external preparations (Barnes et al., 2007, Etxenagusia et al., 2000).

Its yellow/orange latex, was used externally to treat warts, papillae and condylomas, caused by infections of human papilloma virus (HPV) (Etxenagusia et al., 2000). C. majus is rich in various biologically active substances, like benzylisoquinoline alkaloids (e.g. chelidonine, berberine, sanguinarine, coptisine, chelerythrine, protopine, stylopine, and canadine), Flavonoids (e.g. rutin, quersestin, and luteolin), phenolic acids (gallic acid, chlorogenic acid), unsaturated fatty acids (linoleic acid, oleic acid), arytenoids, saponins, and some others (Arora and Sharma, 2013, Nawrot et al., 2017, Tomè and Colombo, 1995). Recent research also showed that its latex is rich in proteins, which are connected with defense response and generation of precursor metabolites and energy (Nawrot et al., 2016, Nawrot et al., 2007; Nawrot, Kalinowski, & Gozdzicka-Jozefiak, 2007; Nawrot, Zauber, & Schulze, 2014). Its latex was shown to contain 334 metabolic, structural and defense-related proteins (Nawrot et al., 2016). Proteins contained in C. majus latex in relatively large amounts are major latex protein (MLP, with high homology to Bet v1-like superfamily proteins), polyphenol oxidase (PPO), peroxidase (POX), lipoxygenase (LOX) and enzymes responsible for alkaloid and phenylpropanoid synthesis (Nawrot et al., 2016, Nawrot et al., 2017). Mostly, they belong to different pathogenesis-related proteins (PR), which are activated in stress- or defense-related conditions for the plant (Fister et al., 2016, Sels et al., 2008, van Loon et al., 2006). Rapid drying or exposure to sun or higher temperature above 38°C produce dark colour product with weak in proteolytic activity. The use of artificial heat yields the better grade of crude papain. The final product should be creamy white and friable. It is sealed in air-tight containers to prevent loss of activity. If 10% common salt or 1% solution of formaldehyde is added before drying, the product retains its activity for many months. Fully grown fruits give more latex of high enzyme potency than smaller or immature fruits. The yield of Papain varies from 20 to 250 g per tree. The yield of commercial Papain from latex is about 20%.

4. Conclusion

It is distributed throughout the plant, but mostly concentrated in the latex of the fruit. The latex is obtained by making two to four longitudinal incisions, about 1/8 inch deep, on the surface on four sides of nearly mature but green fruits while still on the tree. The incisions are made early in the morning, at intervals of three to seven days. The latex flows freely for a few seconds but soon coagulates. The exudate is collected in nonmetallic containers. The latex is dried as soon as possible after collection.

5. References

[1] Hussein A, Mirazi N. (2014) Acute administration of ginger (Zingier officinalis rhizomes) extract on timed intravenous pentylenetetrazol infusion seizure model in mice. Epilepsy Res. 2014; 108:411–19.

[2] Shanmugam KR, Mallikarjuna K, Kesireddy N, Sathyavelu Reddy K. (2011) Neuroprotective effect of ginger on anti-oxidant enzymes in streptozotocin-induced diabetic rats. Food Chem Toxicol. 49:893–97.

[3] Martinc B, Grabnar I, Vovk T. (2014)Antioxidants as a preventive treatment for epileptic process: a review of the current status. Curr Neuropharmacol. 12:527–50.

[4] V.N. Jagtap, MR. V.D. Hawaldar Laboratory manual of pharmacognosy by trinity publishing house satara.

[5] Jayganesh, T.Sudha. (2022) Current trends n Herbal Drug Industry. By choice books and pvt.ltd. page.no.123

[6] J.P.Jayganesh, Dr.T.Sudha (2022) a textbook of herbal drug technology, s.vikas and company, pv books, publication, page no. 136

[7] Noah Samuels, Yoram Finkelstein, Shepherd Roee Singer, Menachem Oberbaum (2007) Proconvulsive effects and interactions with antiepileptic drugs. Epilepsia -International league against epilepsy of pg.no 1528-1167.

[8] Woelk, H et al. (2007): Ginkgo biloba special extract EGb 761 in generalized anxiety disorder and adjustment disorder with anxious mood: a randomized, double-blind, placebo-controlled trial." Journal of psychiatric research, Vol. 41, 6: 472-80.

[9] Shariati Rad S, Nassiri Asl M, Zamansoltani F (2007) Anticonvulsant effects of Pasipay (prepared from passion flower) by PTZ model in the mice. Journal of Medicinal Plants. Sep 15; 3(23):40-5. [11]

[10] Singh B, Mishra A, Goel RK (2011). Anticonvulsant activity of Passiflora incarnata: No role of chrysin. Journal of pharmaceutical negative results. Jul 1; 2(2): 51.

[11] C D Harvey, allan Sherwin, E Van der, R.kleijn (1977), Anticonvulsant drugs Urcarnia rhynchophylla of in white and grey matter of human brain. The Canadian journal of neurological sciences. Vol. 4, Issue 2: 89-92.

[12] Trinka, E.; Rainer, L.J.; Granbichler, C.A.; Zimmermann, G.; Leitinger, (2023) M. Mortality, and life expectancy in Epilepsy and Status, Epilepticus-current trends and future aspects. Front. Epidemiol.

[13] Singh B, Singh D, Goel RK. (2012) Dual protective effect of Passiflora incarnata in epilepsy and associated post-ictal depression. Journal of ethno pharmacology. Jan 6; 139(1): 273-9.

[14] Hakami, T., (2021) Neuropharmacology of Antiseizure Drugs. Neuropsycho Pharmacol. Rep. 41, 336–351.

[15] Eteraf-Oskouei, T.; Najafi, M. 2013, Traditional and modern uses of natural honey in human diseases: A review. Iran journal of basic medical science. 16, 731–742.

[16] J. Keledjian,, P.H. Duffield , D.D. Jamieson , R.O. Lidgard , A.M. Duffield (1988) Uptake into Mouse Brain of Four Compounds Present in the Psychoactive Beverage Kava, journal of pharmaceutical Sciences, Volume77, Pages 1003-1006

[17] B.K. Puri (2007). The safety of primrose oil in epilepsy, Journal of Prostagladine, Leukotrines, and essential fatty acid .,Volume 77, Issue 2: 101-103.

[18] Eckstein D., Schachter S. C. (2010) Natural products in epilepsy-the present situation and perspectives for the future. Journal of Pharmaceuticals. 3(5):1426–1445.

[19] Santilna K.S. Mahesh N.M. Suresh J. (2015) Anticonvulsant Activity Study of Artemisia nilagrica, International journal of pharmacognosy and phytochemical research; 6(4); 826-830.

[20] Zahra rabies (2022), anticonvulsant effect of medicinal plants with emphasis on mechanism of action, Asian pacific journal of tropical biomedicine, vol.2: 166-172.

[21] A.D. Chimbalkar, N.S. Vyawahare, S.S. Sadar (2014) Antiepileptic Activity of Ethanolic and Petroleum Ether Extracts of Urcarnia rhynchophylla in Isoniazid and Strychnine Induced Convulsions, international journal of pharmacy and pharmaceutical research, Vol.6, Issue1: 1-100.