

NATURAL HERBS WHICH ARE USED AS FIRST AID: A REVIEW

Ashwini S.Pundkar*, Kalpana P.Ubale, Sayama M.Sayyad

*Department of Quality Assurance, Rajesh Bhaiyya Tope College of B.Pharmacy, Nipani-Bhalgaon,
Aurangabad, Maharashtra-431007*

ABSTRACT

With recent spectacular technical advancements like exoskeletal robots that communicate with the brain to assist paraplegic people in moving, or magnetic fields that reduce tobacco cravings, the state-of-the-art in healthcare is something to marvel at. It's simple to forget where our knowledge of medicine began and that there are still many medicinal plants readily available today that can effectively treat illnesses as a result of developments in contemporary healthcare. There are numerous benefits to using an all-natural first aid kit as opposed to a synthetic one or reusable first aid supplies. People frequently experience negative responses to chemicals, and hypoallergenicity is not always a property that can be guaranteed. The present aim behind this study is to review different plants which are commonly used as a first aid and it's pharmacological action.

Keyword: *First aid, Herbal Plants, pharmacological action.*

Introduction:

You can easily obtain supplies for a natural first aid pack whether you're mowing your lawn or mountain trekking. Throughout the nation, medicinal plants are common and have been used for millennia to cure wounds and common illnesses. According to Steve Byers, a clinical herbalist from Belfast, Maine, "it's being connected to the land and using our resources creatively." "Healing doesn't require a Band-Aid made in China." According to him, first aid kits typically contain items like gauze, alcohol wipes, antihistamines, and athletic tape that can be beneficial in an emergency. However, they are not the only choice. And it's useful to have a first aid kit on hand in case of emergency, such as when you're stranded in the woods without it. Greta de la Montagne, a Registered Professional Herbalist and Mentor with the American Herbalist Guild, emphasised the need of taking care of one's health needs and being prepared to handle medical emergencies in the garden and the forest. "Putting medicine back in people's hands is very important." De la Montagne, a holistic health practitioner in Montana, considers learning about natural first aid to be empowering. Some of these therapeutic herbs have been used by humans for thousands of years, according to de la Montagne. And more recent scientific research is beginning to demonstrate how these plants function.^[8]

Natural Product: ^[1]

Natural products come in a wide variety of multi-dimensional chemical structures, and their potential for modifying biological functions has garnered a lot of attention. They have since been successfully used in the search for novel medications and have had a significant influence on chemobiology. The tremendous structural complexity of the last century Physical chemistry has allowed for the realisation of the diversity of natural products. The complexity of their well-organized three-dimensional chemical and steric structures influences their effectiveness. qualities with numerous benefits for molecular targets' effectiveness and selectivity. Artemisinin and its analogues serve as a successful example of medication creation from natural materials. presently used extensively for treating malaria. This demonstrates how study conducted with natural goods has significantly aided in the creation of drugs.

While many new medications have been created over the past 50 years utilising high-throughput screening techniques and combinatorial chemistry, natural products and the chemicals produced from them have remained crucial elements in pharmacopoeias. Only a small part of the estimated 250,000–500,000 plant species currently in existence have been studied scientifically for bioactivities. Future discoveries from plants and other natural products therefore have a large chance of providing important information about unique chemical structures and their novel modes of action in relation to the creation of new drugs.

Traditional Medicine: ^[1]

The oldest medical practise in existence, TM is used to cure and prevent both physical and mental diseases. A range of health- and life-threatening disorders were traditionally fought by different communities using a variety of practical treatment techniques. TM is also referred to as complementary and alternative medicine, ethnic medicine, or other names, and it continues to be very important in many nations today.

The majority of the medications used in TM are made from natural ingredients. Since the beginning of time, "clinical trials" have been carried out in TM. In the case of TCM, a great deal of knowledge and advancements have been gathered and developed over the previous thousands of years with regard to preparation techniques, herb selection, material identification, and the ideal period for getting numerous distinct plants. To increase therapeutic efficacy and decrease drug toxicity, TCM urgently needs appropriate processing and dose regulation. Clinical research has yielded a sizable amount of data, and in this way, TM has aided in the creation of contemporary medications. TM offers advantages over other medical treatments due to the use of natural components in the following areas: discovery of drug-like activity, lead compounds and drug candidates, as well as physicochemical, biochemical, pharmacokinetic, and toxicological properties. If any type of TM is effectively implemented, it might surprisingly aid in the creation of new medicines, which would have a variety of positive effects, including major cost savings.

Following are the herbal plants which are used as a First Aid:

1. Chamomile tea: ^[3]

Synonyms: Anthemis nobilis, Camomile tea, Genus Chamaemelum

Biological Source: standardized tea and herbal extracts are prepared from dried flowers of *Matricaria* species.

Family: Asteraceae

Chemical Constituents: Sesquiterpenes, Flavonoids, Coumarins, Polyacetylenes

Healthcare Preparations of Chamomile

Many individuals recommend and use dry chamomile flower powder for issues with long-standing health. Aqueous, ethanolic (alcoholic), and/or methanolic extracts are what are produced when the medicinal components of chamomile are routinely extracted from the dry flowers using water, ethanol, or methanol as solvents. Maximum chamomile extracts have a 50 percent alcohol content. Apigenin, one of the most potent bioactive substances, is often found at 1.2% in standardised extracts. Aqueous extracts, such those found in tea, have relatively low quantities of free apigenin but significant levels of apigenin-7-O-glucoside. Approximately one million cups of chamomile tea are sipped daily, making it one of the most popular herbal teas in the world. There are also chamomile tea bags on the market that either include pure chamomile flower powder or chamomile flower powder mixed with other well-known therapeutic herbs. One part chamomile flower to four parts water with 12% grain alcohol can also be used to make chamomile tincture, which is used to treat children's summertime diarrhoea and to reduce cramping when used with purgatives. In cases of external swelling, such as facial swelling linked to an underlying illness or abscess, chamomile flowers are frequently used alone or in combination with crushed poppy heads as a poultice or hot foment. The entire plant of chamomile is used for manufacturing herbal brews, as well as for a lotion for external use in cases of external swelling, toothache, earache, and neuralgia.

Pharmacological Activity:

1. Anti-inflammatory and antiphlogistic properties
2. Anticancer activity
3. Common cold
4. Cardiovascular conditions

5. Colic/Diarrhea conditions
6. Eczema
7. Gastrointestinal conditions
8. Hemorrhoids
9. Health Promotion
10. Inflammatory conditions
11. Mucositis

2. Lavender Oil: ^[7]

People all across the world have been using essential oils as a component of alternative medicine for many years. The adoption of more natural alternatives to synthetic ones is currently popular. As an innovative, natural, and risk-free substitute for potentially harmful pharmaceuticals, essential oils are available.

Synonyms: Lilac, Plum

Biological Source: Lavender oil, obtained from the flowers of *Lavandula angustifolia*

Family: Lamiaceae

Chemical Constituents: linalool, linalyl acetate, 1,8-cineole *B*-ocimene, terpinen-4-ol, and camphor.

Preparation of Lavender Oil:

Steam distillation is used to extract lavender oil from the flowers of *Lavandula angustifolia*, which belongs to the Lamiaceae family. Linalool, camphor, 1,8-cineole, lavandulol, and linalyl acetate are the main constituents of lavender oil. Aromatherapy uses whole lavender oil as well as its primary constituents, linalool and linalyl acetate. According to gas chromatography and gas chromatography-linked analysis, 51% linalyl acetate and 35% linalool were shown to be the main components of lavender oil. Infrared Fourier Transform analysis.

Pharmacological Activity:

1. **Lavender in the Nervous System:** Results suggest that lavender may have anticholinergic, neuroprotective, and antioxidant effects that are relevant to the treatment of Alzheimer's disease. Lavender oil's neuroprotective effects against cerebral ischemia/reperfusion injury may be due to its antioxidant properties.
2. **Anxiety, Depression:** Anxiety disorders and other illnesses were treated with lavender. There were three clinical trials that looked at the effectiveness of silexan, an oral preparation of lavender oil that is made by steam distilling lavender flowers, in the treatment of subsyndromal (mixed) anxiety disorder, generalised anxiety disorder, restlessness, and agitation.
3. **Neuroimaging:** Following the lavender odour stimulus, positron emission tomography analysis of the brain regional metabolic activity in ten healthy women revealed enhanced neuronal activity in the orbitofrontal, posterior cingulate gyrus, brainstem, thalamus, and cerebellum and decreased activity in the pre/post-central gyrus and frontal eye field. These results suggest that lavender aromatherapy may increase certain respondents' arousal levels in addition to its calming effects.
4. **Sleep:** It has been suggested that lavender is a fantastic natural cure for treating insomnia and enhancing the quality of sleep. Single-blind randomised trials that examined the impact of lavender odour on sleep quality found that it increased mean sleep quality scores in fourteen healthy students, 64 patients with ischemic heart disease, and 34 midlife women with insomnia. The Pittsburgh Sleep Quality Index (PSQI) score of 5 or higher was used to identify ten people who had insomnia and were given lavender odour therapy. Every night, adding six to eight drops of lavender oil to the cartridge increased the PSQI rating by about 2.5 points. Female individuals and younger participants showed more pronounced improvements. Additionally, milder insomnia improved more than severe insomnia.

3. Peppermint Oil: ^[4]

The greatest producer and exporter of mint oil worldwide is India. In the culinary, drug, fragrance, and flavouring industries, mint oil and its components and derivatives are employed. Its primary component, menthol, is used to make toothpaste, pain relievers, cold remedies, Dabur Pudina Hara, and other products.

Synonyms: Brandy Mint

Biological Source: Peppermint oil is obtained from the leaves of the perennial herb, *Mentha piperita* L. and *M. arvensis* var. *piperascens*

Family: Labiatae

Chemical Constituents: limonene (1.0-5.0%), cineole (3.5-14.0%), menthone (14.0-32.0%), menthofuran (1.0 - 9.0%), isomenthone (1.5-10.0%), menthyl acetate (2.8-10.0%), isopulegol (max. 0.2%), menthol (30.0-55.0%), pulegone (max. 4.0%) and carvone (max. 1.0%)

Extraction of Peppermint oil:

Just before flowering, peppermint oil is taken from the entire plant that is growing above ground. Steam distillation is used to extract the oil from the fresh or partially dried plant, and the yield ranges from 0.1% to 1.0%. performed supercritical fluid extraction, and the results were compared to peppermint oil that had been hydrodistilled. When compared to SFE-2 settings, the oil extracted under SFE1 conditions had a higher concentration of menthone, menthol, 1, 8-cineole, and piperitone and a lower concentration of menthyl acetate, -caryophyllene, and -cadinene. The primary ingredients in peppermint scent (oxygenated monoterpenes) made up 79.2% of the compounds under SFE-1 settings compared to 74.4% under SFE-2 conditions. Sesquiterpenes, in comparison, were only 7.7% and 11.6% for SFE-1 and SFE-2, respectively. Terpene acetate content was greater in the hydrodistilled oil, 12% as opposed to 12.0% for SFE-1. Recently, a new technique for the extraction of essential oils was created by Farid Chemet et al. that is far quicker than the traditional hydrodistillation process.

Pharmacological Activity:

- Hot flushes in women:** A peppermint and neroli hydrolat spray was tested for its impact on hot flashes in breast cancer patients in a single-blind randomised control crossover study¹⁵. Only 18 of the 44 patients (41%) preferred the hydrolat spray to a plain water spray, falling short of the 80% threshold needed to recommend it as a regular hot flush control option. But only a few of those who chose it said it was really useful. Hot flush irritation seems to be lessened by both sprays. The choice of spray appeared to be influenced by prior treatment.
- Antimicrobial and anti-plasmid activities:** Gramme (+) *Staphylococcus epidermidis*, Gramme *Escherichia coli* F'lac K12 LE140, and two yeast strains, *Saccharomyces cerevisiae* 0425 ä/1 and 0425 52C, were used to test the antibacterial properties. The bacterial strain *E. coli* F'lac was used to study the antiplasmid activity. Each oil demonstrated antibacterial activity, and three of them also demonstrated antiplasmid activity. The checkerboard approach was used to examine the relationship between menthol and peppermint oil and the antibiotics on the same bacterial strain.
- Against herpes simplex virus:** This essential oil has the ability to have an immediate virucidal impact on HSV. Additionally effective against an HSV-1 strain that is resistant to acyclovir (HSV-1-ACVres), peppermint oil drastically reduced plaque formation by 99%. Given the oil's ability to enter the skin due to its lipophilic character, peppermint oil may be suited for topical therapeutic usage as a virucidal agent in recurrent herpes infection.
- Larvicidal and mosquito repellent action:** *Aedes aegypti*, *Anopheles stephensi*, and *Culex quinquefasciatus* third instar larvae were exposed in enamel trays 6' 4 inch² in size filled to a depth of 3 inch with water to test the larvicidal activity of *Mentha piperita* L. (peppermint oil), an essential oil that is widely used. When applied to human skin, the oil demonstrated significant insect repellent properties against adult mosquitoes. Against *An. annularis*, *An. culicifacies*, and *Cx. quinquefasciatus*, there was 100%, 92.3%, and 84.5% protection, respectively. *Mentha* oil's repelling properties were comparable to those of Mylöl oil, which contains dibutyl and dimethyl phthalates.

4.Eucalyptus Oil: ^[6]

French explorers found the eucalyptus globulus on the island of Tasmania in 1972. Numerous species of eucalyptus trees grow quickly and reach height. The Myrtaceae family includes the evergreen, tall tree or shrub known as eucalyptus. Despite being native to Australia and Tasmania, it has spread widely to other nations. There are roughly 700 species of eucalyptus, and more than 300 of them have leaves that yield volatile oil. Various eucalyptus species' essential oils are utilised in the culinary, toiletry, cosmetics, and pharmaceutical industries. Due to its extensive medical benefits, eucalyptus globulus has a long history of use in traditional medicine. Potent antibacterial, astringent, deodorant, diaphoretic, expectorant, inhalant, insect repellent, rubefacient, and suppurative properties have been described for the plant.

Synonyms: Tail Parn, Sugandh Patra, Nilgiri

Biological Source: The plant and whole parts of the plant belonging to species Eucalyptus globulus

Family: Myrtaceae

Chemical Constituents: flavonoids, alkaloids, tannin and propanoids.

Pharmacological activity:

1. **Antiseptic:** Since ozone is created when eucalyptus oil is exposed to the air, it is perhaps the strongest antiseptic in its class, especially when it is old. It has chosen to operate as a disinfectant, eradicating the lowest forms of life.
2. **Antihelminth action:** Due to the presence of phytochemical components like borneol, cineol, linalool, gernayl acetate, saffrol, and antheol, which exhibit anthelmintic action of various intestinal worms, eucalyptus-chloroform has been used as one of the treatments for hookworm in the tropics for some time.
3. **UTI and RTI Infection:** In addition to being injected into the urethra, an emulsion prepared by mixing water and gum-arabic powder in equal parts has also been administered internally in draxhum dosages to treat bronchitis, pulmonary tuberculosis, and other microbic lung disorders.
4. **Irritant action and parasitic Infection:** When taken in large dosages, it causes irritation to the kidneys, where it is primarily eliminated, and it has a noticeable nerve depressive effect that ultimately affects breathing by acting on the medullary centre. practised by veterinarians. Dogs with distemper, horses with influenza, and all other animals with septicemia are given eucalyptus oil. Additionally, it treats parasite skin conditions.
5. **Antiviral:** A short-term in vitro assay was used to test twelve euglobals from Eucalyptus globules and their twenty-six related compounds for their inhibitory effects on Epstein-Barr virus activity. The findings revealed that euglobal-III had potent inhibitory effect and that the majority of euglobals had monoterpene structures. Grandinol and its homograndinols demonstrated more potent inhibitory effects.
6. **Antitumor:** The in vitro Epstein-Barr virus early antigen (EBV-EA) activation test system, which is induced by 12-O-tetradecanoylphorbol-13-acetate (TPA), was used to investigate the antitumor-promoting activity of Euglobals Ia1, Ia2, Ib, Ic, IIa, IIb, IIc, III, IVa, IVb, and V and VII. Following euglobal-III in terms of inhibitory activity were euglobals Ib, IIa, Ic, Ia1, and Ia2. In THP-1 cells, eucalyptus globulus oil prevents NF-kappa B from moving into the nucleus as a result of LPS.

5. Arnica: ^[5]

Since ancient times, the homoeopathic medical system has used arnica montana. Although it is used to treat 66 different clinical disorders, contusions, wounds, rheumatism, and inflammation are among its most common applications. 'Arnica' was never mentioned in early mediaeval manuscripts. The editor of St. Hildegard's "Physica" gave this name in 1533, and Dalechamps continued to use it in the 16th century, believing it to be derived from the Greek word "Ptarmika," which means something that causes sneezing. Haller and Linnaeus were the first to use the name "Arnica" in both pharmacy and botany. Arnica montana L., also known as "betonica de los montes," "tobaco de montana," "talpa" or "talpica" in northern Spain, was first successfully employed in hospitals in 1785 for the treatment of amaurosis, a condition that causes vision loss without obvious eye damage.

Synonyms: 'tobaco de montana', 'talpa' or 'talpica'

Biological Source: The plant and parts of the plant belonging to species *Arnica montana*

Family: Asteraceae

Chemical Constituents: sesquiterpene lactones and their short-chain carbonic acid esters, flavonoids, carotenoids, essential oils, diterpenes, arnidiol, pyrrolizidine alkaloids, coumarins, phenolic acids, lignans and oligosaccharides.

Pharmacological activity:

- 1. Anti-inflammatory activity:** Significant anti-inflammatory potential exists in *Arnica montana*. Sesquiterpene lactones have a different chemical mechanism than non-steroidal anti-inflammatory medicines such as indomethacin and acetyl salicylic acid, according to Huber et al. in 2011. These lactones quickly penetrate the skin and greatly reduce NF- κ B-mediated inflammation. I κ B, the inhibitory subunit of NF- κ B, is phosphorylated and degenerates, stimulating NF- κ B. Helenalin inhibits NF- κ B activation by T cells, B cells, and epithelial cells, which in turn prevents κ B-driven gene expression. This specific obstruction is caused by a change in the NF- κ B/I κ B complex, which prevents helenalin from releasing I κ B.
- 2. Immunomodulatory activity:** According to reports, the polysaccharide portion of *A. montana* flowers has strong immunostimulating effects (increased granulocyte phagocytosis). Two polysaccharides were isolated from cell cultures of *A. montana* using DEAE-Sepharose CL-6B and Sephacryl S-400 column chromatographic techniques: an acidic arabinogalactan-protein (mean Mr 100 000), which activates macrophages to release tumour necrosis factor and possess anticomplementary activity, and a neutral fucogalactoxyglucan (mean Mr 22 500), which increases phagocytosis.
- 3. Antimicrobial activity:** *Streptococcus sobrinus* 6715 and *Strep. Mutans* - OMZ 175 are both susceptible to the antibacterial effects of *Arnica montana* extracts. Zones of inhibition were assessed using the agar diffusion method. At these same doses, there was a modest inhibition of the developing cells (19% for *Strep. mutans* - OMZ 175 and 15% for *Streptococcus sobrinus* 6715) as well as a 29% inhibition of the production of water-insoluble glucans. *A. montana*'s roots contain thymol compounds that have been shown to have antibacterial and antifungal properties, while the plant's essential oil exhibits antiphlogistic properties.
- 4. Improves circulation:** According to reports, the herb *arnica montana* can help people with reflex sympathetic dystrophy syndrome, which includes fibromyalgia, toxic neuropathy, and diabetic neuropathy, as well as conditions where there is restricted blood supply to their limbs and nerve endings.
- 5. Hepatoprotective activity:** Phenolic chemicals extracted from *A. montana* are used to improve the release of chelates and bilirubin and the elimination of cholesterol, as well as to restore the liver's ability to generate bile. *Arnica* increases the production and excretion of bile acids, bilirubin, and cholesterol in rats with carbon tetrachloride-induced liver injury, according to Marchishin et al. in 1983. Bile secretion also quickens the activity of serum enzymes.
- 6. Analgesic:** Literature has also noted that *arnica montana* extract can treat wounds. To gauge this activity in mice, the acetic acid-induced writhing test was performed. It was discovered that *A. montana*, lowers writhes optimally at a dose of 100 mg/kg of intraperitoneal 0.6% acetic acid per kg. Another study found that *A. montana*, either by itself or in conjunction with *H. perforatum* gel, efficiently heals surgically caused incisions on the backs of Wistar rats.

Summary and Conclusion:

This review has looked at the morphology, distribution, pharmacological information, and phytochemistry of the medicinal plant Chamomile tea, Peppermint oil, Lavender Oil, Eucalyptus oil, *A. montana*. The plant has a wide range of functions, according to pharmacological and phytochemical investigations. Although the plant's extracts have been used to treat a variety of illnesses since the dawn of time, modern dosage forms of the various phytoconstituents present in the plant can now be prepared with proper investigation of its mechanism of action, pharmacotherapeutics, toxicity profile, standardisation, and clinical studies. The therapeutic potential of the plant's blooms has been the subject of extensive

research up to this point. In order to create products that are more beneficial from an economic and therapeutic standpoint, it is now necessary to investigate the medicinal potential of different plant sections.

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