



A Review of Medicinal Herbs in The Treatment of Common Human Disease

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Abstract

Background: Medicinal herbs have been integral to traditional medicine throughout history, offering diverse solutions for various medical conditions. The World Health Organization (WHO) estimates that 95% of the global population relies on traditional medicine, predominantly using plant extracts and their active ingredients. This review explores the historical and contemporary uses of medicinal herbs in treating common human ailments, bridging the gap between traditional wisdom and evidence-based medicine. **Methods:** This review critically examines recent scientific investigations and historical uses of various medicinal herbs. The focus is on their applications in respiratory health, cardiovascular health, digestive diseases, and anti-inflammatory treatments. The herbs selected for this review include licorice and eucalyptus for respiratory ailments, garlic and hawthorn for cardiovascular health, peppermint and ginger for digestive issues, and chamomile and turmeric for their anti-inflammatory properties. The mechanisms underlying the medicinal effects of these herbs are analyzed through a thorough evaluation of recent scientific studies. **Results:** The review highlights the efficacy of medicinal herbs: licorice and eucalyptus for respiratory health, garlic and

hawthorn for cardiovascular health, peppermint and ginger for digestive issues, and chamomile and turmeric for inflammation. These herbs offer significant therapeutic benefits, supported by both historical use and contemporary research. **Conclusion:** This review underscores the medicinal potential of various herbs in treating common human ailments, supported by both historical use and contemporary scientific evidence. The integration of herbal treatments into modern healthcare practices is crucial for maximizing their therapeutic benefits. The complex interactions between traditional medicine and contemporary science emphasize the necessity of continued research to fully realize the potential advantages of these herbs. This review serves as a valuable resource for researchers, medical professionals, and individuals interested in the therapeutic potential of medicinal plants, highlighting the importance of bridging the gap between conventional wisdom and evidence-based medicine.

Keywords: Medicinal Herbs, Common Diseases, Treatment for disease, Sustainable Human Health

Significance | This review discusses the extensive use of medicinal herbs across cultures and their potential in treating various common human ailments.

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Introduction

Through the millennia, humans have relied on nature to provide them with basic needs including food, clothes, housing, medicine, flavors, and fertilizers, as well as transportation. Medicinal plants continue to play a major part in the healthcare systems of large portions of the global population. This is especially true in poorer nations where herbal medicine has a long history of use. Both developed and developing countries are seeing an increase in the

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discovery and acceptance of the therapeutic and economic benefits of these plants (WHO, 1998).

Plants have provided the building blocks for the majority of traditional medical systems for thousands of years, and there are still plants that can provide novel medications to humans. The use of medicinal plants is based on experimental research conducted over hundreds to thousands of years, and some of the supposed health benefits of plants have been shown to be false. The earliest known accounts of cuneiform carvings on clay tablets date to approximately 2600 BC and come from Mesopotamia. Materials used in these carvings included oils of *Commiphora* species (myrrh), *Cedrus* species (cedar), *Glycyrrhiza glabra* (licorice), *Papaver somniferum* (poppy juice), and *Cupressus sempervirens* (cypress). These oils are still used today to treat a wide range of ailments, from coughs and colds to inflammation and parasite infections (Fakim, 2006).

The use of traditional medicine is common in Thailand, Sri Lanka, China, India, Japan, and Pakistan. China alone claims that traditional tribal remedies account for over 40% of all medicinal usage. Legumes belonging to the Fabaceae, Mimosaceae, and Caesalpiniaceae families are used in Thai herbal treatments. The sales of herbal medicines are believed to have generated more than US\$2.5 billion by the mid-1990s. In Japan, the demand for herbal medical remedies is higher than that of conventional pharmaceutical medicines. Currently, plants remain essential for healthcare and offer the greatest prospect for producing safe pharmaceuticals in the future (Hamburger et al., 1991).

Even though we now have access to many contemporary medications, finding and creating new therapeutic agents is still extremely important. An estimated one-third of all known human illnesses have a treatment that is deemed appropriate. As a result, the battle against illnesses needs to be waged nonstop.

Traditional plant remedies continue to hold a prominent place in the contemporary pharmaceutical industry due to their few side effects and the compounds' synergistic benefits. Over the past 50 years, plants have been the source of most significant medications that have transformed modern medical practice. These chemical components possess medicinal qualities akin to both plant and animal medications. The World Health Organization (WHO) supports the inclusion of herbal medications in national healthcare initiatives because of their affordability, long history of usage, and perceived safety compared to contemporary synthetic pharmaceuticals (Singh & Singh, 1981). Consequently, numerous pharmaceutically important medications essential for treating human diseases have been discovered through the investigation of pharmacologically and biologically active compounds found in plant extracts (Rastogi et al., 1990).

The synthetic drug industry has not been able to finance the effective treatments for certain ailments that the phytochemical-

pharmacological research program has recently produced. Significant research on plants such as *Artemisia annua*, *Catharanthus roseus*, *Taxus* spp., *Lantana camara*, and *Bacopa* spp. has revealed compounds of substantial therapeutic potential, even though these plants were once considered dangerous or ineffective. They are now regarded as important medical herbs. Modern searches for bioactive compounds typically employ sophisticated bioassays and bioassay-guided fractionation of traditional healers' medicinal plants, resulting in the identification of multiple novel compounds with potential medicinal importance. The diligent work of researchers has led to the development of several new pharmacologically active ingredients, numerous therapeutic leads, and powerful medications from herbal remedies (Philipson et al., 1990).

The commercialization of pharmaceuticals derived from plants began in 1826 when E. Merck in Germany started producing morphine on an industrial basis (Galbley et al., 1999). By 1991, approximately 50% of the most popular medications were derived from natural ingredients or natural items themselves (Cragg et al., 1997).

Plants as drugs

Around the world, several plant species are employed as medicine for human health. Alkaloids and terpenoids are examples of active chemicals found in certain plant species (Table 1). These substances have been tried and proven to work well as antibacterial, anti-infection, and sweeteners. For example, alkaloids and histamine found in *Alstoniaboonei* bark can be used to treat fever, vertigo, and elevated blood pressure. For a very long time, people have utilized the fiery flavors of garlic (*Allium sativum*) and ginger (*Zingiber officinale*) to preserve human health. The claim that medicinal plants have a significant impact on long-term human health is not hyperbole. Humanity has been using plants as a source of medicines for thousands of years. Most of the active components of plants used in medicine were created with the development of synthetic organic chemistry.

Aloe vera (*Aloe barbadensis*)

Aloe vera is a multifunctional plant whose medicinal properties have been used for years (Figure 1). It has well-established anti-inflammatory, antibacterial, and wound-healing properties. Aloe vera is frequently used to heal wounds, bruises, burns, and sunburns. In addition, it can be used to relieve psoriasis and eczema as well as acne. Aloe vera gel can be taken internally as a supplement or beverage, or it can be administered topically to the skin. Aloe vera is used topically, but it is also claimed to have internal health benefits, including improving immunological function, aiding with digestion, and reducing inflammation. Aloe vera is a naturally occurring plant that is safe to use for a number of applications. Extract is a tonic, anti-inflammatory, bactericidal, and tissue-regeneration-promoting agent that is utilized locally. In addition to

organic acids, mineral salts (zinc, copper, and molybdenum), polysaccharides, amino acids, enzymes, saponins, resins, and substances including metal and vitamins, aloe Aloi. It possesses potent immunomodulatory and restorative qualities (Jędrzejko et al,1997). Aloe vera is applied topically to the facial tissues, where it functions as an anti-irritant and moisturizer to lessen nose chafing. Cosmetic businesses frequently include Aloe vera sap or its derivatives into makeup, tissues, moisturizers, soaps, sunscreens, incense, shaving creams, and shampoos (Reynolds, 2004).

Tulsi (Ocimum sanctum)

About 75 cm tall, *Ocimum sanctum* (Family Labiatae) is an erect, multibranched, robust, and scented plant (figure 2). This little herb is grown all over India and is revered in Hindu homes and temples. This is usually referred to as India's Holy Basil in English, Tulsi in Sanskrit, Kala-Tulsi in Hindi, and Vishnu-Priya. This plant's leaves, seeds, and root have all been utilized in traditional Ayurvedic treatment. Tulsi has a very complex chemical makeup that includes a variety of nutrients and other biologically active substances. The way these ingredients are cultivated, stored, and timed all cause substantial variations. Since the nutritional and pharmacological qualities of the entire herb in its natural state as it has been traditionally used come from the synergistic combination of numerous active phytochemicals, individual compounds or extracts cannot adequately replicate the total effects of Tulsi. Standardization of Tulsi's active ingredients has proven to be extremely difficult thus far because of the plant's intrinsic botanical and biochemical complexity. Among the numerous discovered and extracted active components, ursolic acid and eugenol an essential oil are the most well-known (Sharma et al,2022). Traditionally, tulsi has been consumed in several ways, such as herbal teas (cold, hot, or dried), powdered leaves, tinctures made of alcohol, oil preparations (ghee), and formulations made of seeds, roots, and stems that can be used topically or systemically. Apart from different extracts, the isolated chemical is also injected in human clinical trials and animal investigations.

Stress resilience:

It has been discovered that the plant *Ocimum sanctum* possesses adaptogenic qualities after a series of tests on rats and mice (Bhargava et al,1981). The ability to tolerate, adapt to difficult situations, and provide substantial stress protection is enhanced by basil leaves (adaptogenic). To reduce stress, even a healthy individual can chew 12 basil leaves twice a day.

Common cold and fever:

When cooked with tea, tender tulsi leaves serve as a preventive medication against dengue fever and malaria, two diseases that are often more common during the rainy season. It has been demonstrated that an Ayurvedic preparation containing Piper nigrum, *Curcuma longa*, and *Ocimum sanctum* exhibits

antimalarial action against *Plasmodium vivax* and is particularly effective against *Plasmodium falciparum* (Rajeshwar et al,1992). It has been discovered that pretreatment reduces the clinical signs of malaria that these species cause. A diaphoretic for malarial fever is made from a decoction of Tulsi plant roots (Pavithra et al,2014).An essential ingredient in many Ayurvedic cough syrups and expectorants is tulsi. It aids in the mobilization of mucus in asthma and bronchitis. Chewing tulsileaves reduces symptoms similar to the flu and cold.

Antibiotic property

Ocimum sanctum L. Essential oil has been shown to have antibacterial activity by inhibiting the growth of *E. Coli*, *B. Anthraci*, and *P. Aeruginosa* in vitro. Additionally, *ocimum sanctum* has antifungal action against *Asperigillus niger*, and a study indicated that an aqueous extract of the plant was beneficial for treating viral encephalitis in patients(Rajeshwar et al,1992).Tulsi leaf paste is in fact proved to be quite efficient in treating ring worm infections. Tulsi is useful in treating numerous major illnesses because of its strong inherent antibacterial, antiviral, and antifungal properties.

Hepatoprotective, Renoprotective and Neuroprotectiveactivities

The hepatoprotective effects of *Ocimum sanctum* leaf extract against hepatotoxic paracetamol were demonstrated by the significant reduction of serum enzymes in rats, including aspartate aminotransferase (AST), alanine aminotransferase (ALT), and alkaline phosphatase (ALP). Histopathological examination also revealed a marked reduction in fatty degeneration of the liver (Chattopadhyay et al,1992). When compared to the group of rats treated with gentamicin alone, the administration of a combination of *ocimum sanctum* aqueous leaf extract and gentamicin effectively avoided rise in levels of serum creatinine and blood urea. It has been observed that the leaves and seeds of the Tulsi plant have diuretic properties and lower blood and urine uric acid levels in albino rabbits (Sarkar et al,1990). In albino rats, *ocimum sanctum* leaf extract reduces dendritic deficit brought on by stress in hippocampus neurons.

Tulsi is a common herb grown in many households with a wide range of therapeutic properties. It would be a blessing in disguise if this herb becomes a medicine for the common man. Still more clinical trials need to be conducted to support its medicinal therapeutic uses.

Bael (Aegle marmelos)

The fruit *Aegle marmelos*, also referred to as Bael, is a native of the Indian subcontinent, which encompasses Bangladesh, Thailand, Nepal, India, and Sri Lanka. It is an unappreciated fruit. It is a moderately sized deciduous tree of the Rosaceae genus (Figure 3). It is a subtropical plant that can be grown anywhere in the world and is tolerant of a variety of environments. In general, the plant can grow up to 1200 meters above sea level, but in Nepal, reports

have shown that trees can reach up to 1500 meters, extending from the hills to the Terai region. It is also highly adaptable to a variety of harsh environments and soil types. Tolerances for temperature vary from 7 to 48 degrees Celsius (Baral et al,2016), and it thrives in the sandy wasteland that is alkaline and marshy. Researchers are looking into the functional qualities of numerous underused plants as a result of consumers' increased knowledge of the impact of nutrition on human well-being and the growing demand for functional foods and nutraceuticals. Consequently, a range of fruits with nutritional and therapeutic qualities have been presented as appropriate components for the food manufacturing sector. The plant's various health benefits, including antimicrobial, antioxidant, antidiarrheal, antidiabetic, antiulcerative, cardioprotective, anticancer, gastroprotective, and hepatoprotective effects, are attributed to the presence of fibers, polyphenols, carotenoids, terpenoids, flavonoids, alkaloids, and coumarins (Sekar et al,2011). While the fruits of the tree are the most valued and edible component, the Ayurvedic medical system also uses the leaves, stems, bark, and roots of the plant to treat a wide range of human illnesses (Mali et al.,2020). Bael is still a fruit that is neglected despite having great flavor, nutritional value, and medicinal promise for the functional food industry. Since bael is a seasonal fruit, it cannot be utilized all year round. As a result, it has the potential to add economic value by processing it to create a variety of goods like tea, juice, drinks, candies, and jams. Its difficult-to-eat hard shell, sticky texture, and abundance of seeds may also contribute to its lower popularity compared to other table fruits. Therefore, additional processing is required to make the fruit easily consumable so that it can be developed into a functional food product. Fruit eating has been linked to a number of preventive and health-protective advantages. Numerous scientific research have now confirmed the traditional use of different sections of the Bael plant for therapeutic purposes to treat various diseases. A brief discussion of the herb Bael's various medicinal uses has been provided.

Antimicrobial Activity

Numerous in vitro investigations have revealed that the various Bael plant extracts suppress a broad range of harmful microorganisms, including fungus, viruses, and bacteria. The effectiveness of Bael's methanolic extract against *Salmonella typhi* was demonstrated in a study conducted by Rani and Khullar (Rani & Khullar, 2004). Comparably, in a different investigation, the ethanolic extract shown antibacterial qualities against *Bacillus subtilis*, *E. Coli*, *Staphylococcus aureus*, and *Pseudomonas aeruginosa* (Wei et al,2018). Fruit leaf extract was tested and found to be efficient at a concentration of 40 g/ml against a range of gram-positive bacteria, including *Bacillus cereus*, *Staphylococcus aureus*, *Staphylococcus epidermidis*, and *Enterobacter aerogenes* (Mujeeb et al,2014). Possible explanations for this could include the presence of cuminaldehyde and eugenol through various mechanisms, such

as membrane-level peptidoglycan synthesis inhibition or blocking of protein synthesis (Duke et al,1992). Additionally, it has been shown that different plant components have antiviral action against human coxsackieviruses B1–B6. The most potent viricidal activity is seen by the chemical marmelide, which disrupts the early phases of the viral replicative cycle at a concentration of 62.5 g/ml. The results indicate that it is more effective even when compared to the usual antiviral medication ribavirin (2000 g/ml) (Badam et al,2002)

Anticancer Activity

One of the leading causes of death in the globe is cancer. Because of the severity of the illness and the side effects of the medication used to treat it, researchers are exploring alternative natural sources of treatment. An investigation of the leaf extract of Bael revealed that it possesses anticancer qualities. When conducted on several cell lines, including β -lymphoid, melanoma Colo38, leukemic K562, erythroleukemic HEL, T-lymphoid Jurkat, and breast cancer cell lines (MDA-MB 231) (Lampronti et al,2003). Similarly, by inhibiting the proliferation of malignant cells and causing death, the chemical marmelin that was isolated from Bael shown anticancer effects against human colon cancer (HCT-116), human epithelial type 2 (Hep-2), and alveolar epithelial carcinoma cells (Murthy et al,2013). The fruit extract of the plant showed chemopreventive action against skin carcinogenesis produced by 7, 12-dimethylbenz[a] anthracene (DMBA) in a mouse experiment. The fruit's methanolic extract was found to be more effective in the study in suppressing hepatocarcinogenesis in Wistar rats, which was caused by the induction of diethylnitrosamine and 2-acetylaminofluorene, respectively, at concentrations of 25 mg/kg and 50 mg/kg. The fruit extract contains other chemicals that contribute to the chemoprotective properties, including rutin, eugenol, citral, limonene, luteol, and anthocyanins (Husain & Sultana,2011). Human melanoma cells, human pancreatic adenocarcinoma cells, human epidermoid carcinoma cells, human hepatocellular carcinoma cells, and prostate carcinoma cell lines were all subjected to luteol's anticancer effects (Chandrasekara et al,2018)

Antidiabetic Activity

Diabetes affects a sizable portion of the world's population and is brought on by the body's insufficient production of insulin. Consequently, there is a rise in blood glucose levels. A significant drop in blood glucose was observed in an experiment involving the oral administration of an aqueous extract of Bael fruit to streptozotocin-induced diabetic rats. Additionally, there was an increase in insulin levels and a decrease in glycosylated hemoglobin. It has been shown that a fruit extract concentration of 250 mg/kg is more effective than the popular diabetes medication glibenclamide (Kamalakkannan & Prince, 2003). Similar to this, umbelliferon, β -D-glucopyranosyl-(2I III), and β -D-glucopyranoside isolated from Bael exhibit hypoglycemic action by raising the levels of plasma

insulin and hexokinase in diabetic rats while lowering blood glucose, glycated hemoglobin, and glucose-6-phosphate (Sharma et al,2007)

Antioxidant Activity

Bael's antioxidant capabilities are attributed to the presence of antioxidant components such flavonoids, glutathione, β -carotene, ascorbic acid, total polyphenols, and β -tocopherol. By preventing the production of free radicals or interfering with their synthesis, these substances can decrease oxidative stress brought on by metabolic processes as well as other chemical and environmental variables. The antioxidant activity of the plant Bael has been the subject of numerous investigations employing a variety of techniques, including the superoxide radical scavenging assay, the ABTS radical scavenging assay, and the 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging assay. Bael's antioxidant activity can be seen in both chloroform and aqueous extracts, and research indicates that unripe fruit extract is more effective in scavenging free radicals than ripe fruit (Sundaram et al,2020).

Bael has been used to treat several human diseases. The presence of different bioactive compounds and their nutritional composition makes it a potential fruit to be developed as a nutraceutical. Despite having many health benefits, the fruit is still underutilized and has been used locally. Apart from exploring the possibilities of using the different plant parts as medicine, the production of different functional products by using its fruits should be promoted at a commercial level. In the future, it could be developed as a functional food product and play a significant role in healthy living.

Night Jasmine (*Nyctanthes arbortristis*)

The night jasmine tree grows to a low height. It produces spherical seeds. It produces fragrant, extremely delicate blooms. Its tree swings its blooms to the soil below. When someone inhales the aroma of night jasmine, their mood is instantly elevated. When dried night jasmine blooms are submerged in water, the water takes on a yellow hue. Its stick color is used to provide yellow color to medications. Chewing night jasmine leaves turns the tongue yellow (Agrawal et al,2013). In the Family Oleaceae, the genus Night Jasmine has over 600 species of tiny trees and vines. These glabrous twining shrubs are easily found in tropical Asia and warm temperate regions of Europe and Africa, where they are also extensively grown in gardens. Its leaves and blossoms are widely known for their many purposes. For example, in traditional Asian medicine, the flowers have been used to cure a wide range of ailments, such as fever, conjunctivitis, diarrhea, dermatitis, asthma, abscess, breast cancer, uterine hemorrhage, and toothache. The leaf pieces are used in China to cure dysentery, bellyache, and quadriplegia gall. *Jasminum sambac* is one of the most widely grown plants in many Asian nations, including Thailand (Agrawal et al,2013), because to its strong therapeutic potential.

Jasmine can be utilized as an aphrodisiac, sedative, antibacterial, antidepressant, antispasmodic, and analgesic, whether it's in the form of flowers or essential oil (Figure 3). Jasmine has been utilized in Ayurveda as an aphrodisiac, to boost immunity, and to treat fever. Conjunctivitis has also been thought to be treated with it. Jasmine flowers are prepared and drunk as a herbal and healing tea in traditional Chinese medicine. It is well known that a jasmine tea infusion helps relieve fevers, irritation of the urinary tract, and other infections. Jasmine tea also has the potential to help with anxiety and stress relief. For those who are suffering from sunstroke or heat stroke, it can be quite beneficial.

Nutritional Value of Harsingar:

Benzoic acid, fructose, glucose, carotene, ascorbic acid, methyl salicylate, tannic acid, oleanolic acid, and flavanol glycosides are all present in Harsingar leaves. Because the flowers contain glycosides and essential oils, they are particularly helpful. Myristic, oleic, and palmitic acids are present in the seeds. This plant's alkaloids and glycosides make its bark beneficial. This flower's extracts have antiviral and antifungal qualities. In addition to its antileishmanial characteristics, it also possesses hepatoprotective and immunostimulant qualities.

TREATS VARIOUS TYPES OF FEVERS:

Malaria fever can be effectively treated with night jasmine. Additionally, it cures bile disorders that cause nausea, diarrhea, and elevated body temperature. This flower's leaves help decrease malaria fever caused by *Plasmodium falciparum* strains. To make this, simply combine 1 milliliter of olive oil with 2 drops of arising oil in a basin. Try soaking this herb in the oil for an hour. Apply oil to your feet now (Godse et al,2016).

Reduces Pain and Inflammation:

Parijat produces wonderful essential oils that are excellent for reducing inflammation, discomfort, and injuries. In addition, it lessens the discomfort caused by rheumatism, stress, muscle tension, arthritis, and sore muscles. Thus, it is simple to see how helpful parijat is for pain relief. Therefore, in a bowl, combine the coconut oil with 5–6 drops of parijat essential oil. After that, reheat the fluid and give your swollen area a massage. It will be really helpful (Godse et al,2016).

The jasmine that blooms at night is a fragrant plant that possesses a wide range of medical benefits, including anti-inflammatory, anti-HIV, cytotoxic, hypoglycemia, anti-malarial, anti-fungal, anticancer, antioxidant, hepatoprotective, antipyretic, and wound-healing effects. Because of its fragrant and dazzling white blossoms, night blooming jasmine is often utilized as an ornamental plant. Chinese traditional medicine applies the leaves of *C. Nocturnum* externally to cure swellings and burns. To prove the effects listed above in humans, more investigation and clinical testing are required.

Ashoka Tree (*Saraca asoca*)

Numerous bioactive substances, including proteins, sugars, tannins, glycosides, flavonoids, steroids, and many more, may be found in ashoka plants (Kulkarni, 2018).

Ashoka tree for cancer

According to a 2012 study by Cibirin et al., flavonoids from Ashoka tree blossoms may lessen the quantity of skin cancer tumors. This is due to the possibility that it will lessen oxidative lipid (fat) destruction and stabilize free radicals, which are dangerous chemicals found in the body (Figure 4) Furthermore, the Ashoka tree's flavonoids may lessen the activity of some enzymes that may cause skin cancer, such as glutathione peroxidase, catalase, and ornithine decarboxylase.(Cibirin et al,2012). To find out if the Ashoka tree can prevent cancer, more research on people is necessary as these studies were carried out on animals.

Ashoka tree for bacterial infections

According to a 2012 study by Shirolkar et al., catechins found in the bark and leaves of Ashoka trees may have antibacterial properties. The growth of bacteria may be inhibited by the catechins. It may combat infections brought on by a variety of bacteria, including *Staphylococcus aureus*, *Pseudomonas aeruginosa*, and *E. Coli* (Shirolkar et al,2013). To find out if the Ashoka tree can treat bacterial illnesses, more research is necessary.

Ashoka tree for diabetes

Bioactive substances found in the Ashoka tree, such as phytosterol, flavonoids, and saponins, may be helpful for type II diabetes, according to a 2014 study by Mishra et al. The release of insulin, a hormone that controls blood sugar levels, may be increased by these bioactive substances. It might also lower blood sugar levels(Mishra & Vijayakumar,2014). To find out if the Ashoka tree can help with diabetes, further extensive research on people is necessary. If you have unusually high blood sugar, you should speak with your physician.

Ashoka tree for stomach ulcers

According to a 2009 study by Maruthappan et al., Ashoka tree blossoms may lessen stomach ulcers. According to the findings, stomach ulcers may be less common if the Ashoka tree reduces lesions, inflammation, and acid production (Maruthappan & Shree,2010). Nevertheless, since these investigations were carried out on animals, more extensive research on people is necessary to determine whether the Ashoka tree can help with stomach ulcers.

Ashoka tree for heart diseases

According to a 2013 Swamy et al. Study, the Ashoka tree's bioactive components, including as epicatechin and β -sitosterol, may lower the risk of heart disease. By stabilizing the body's free radicals, or dangerous molecules, and lowering the oxidative breakdown of lipids, or fats, ashoka tree may lower bad cholesterol levels. Antioxidant activity may therefore help protect the heart as high cholesterol levels in the body may raise the risk of heart disease.(Swamy et al,2013). To find out whether the Ashoka tree can

help lower the risk of heart disease, further extensive research on people is necessary. Therefore, if you detect any heart disease symptoms, you should see your doctor right away.

Ashoka tree for reducing pain

According to a 2010 study by Verma et al., consuming Ashoka tree leaf extracts may aid in pain relief. Pain may be lessened by the bioactive substances found in Ashoka trees, such as tannins, triterpenoids, saponin, flavonoids, and glycosides (Verma et al,2010). To find out if the Ashoka tree can help with pain relief, more research is necessary. Therefore, if you are in discomfort for an extended length of time, you should see a doctor.

Neem (*Azadirachta indica*)

Azadirachta indica, also referred to as Indian lilac or margosa, is the plant scientifically recognized as neem in India (Figure 5). It is the most adaptable and varied (having a wide range of species) tree in the tropics, which may have therapeutic benefits. Neem produces a wide range of useful non-wood items, including bark, gum, flowers, leaves, fruits, oil, seeds, and neem cake, which is the residue left over when neem oil is extracted from the seeds. Hence, when compared to all other tree species, it is thought to be the most beneficial tree.1.Neem is known as "arista" in Sanskrit, which means "perfect, complete, and imperishable."(Girish & Shankara, 2008).. Neem is known by its Sanskrit name, "Nimba," which comes from the phrase "nimbat swasthyamdadati," which translates as "to give good health." Neem is even known by the Persians as "Azad-Darakth- E- Hind," which roughly translates to "Free tree of India." It has a great deal of promise for use in medicine, pest control, and environmental protection. In addition to its possible health benefits, neem might be a natural source of agrochemicals, insecticides, and pesticides (Girish & Shankara, 2008).

Neem for Inflammation and Arthritis:

Research has indicated that nimbidin, a compound present in neem, may have anti-inflammatory and anti-arthritic properties. Nimbidin may be able to prevent neutrophils and macrophages from inducing inflammation. Neem may help reduce inflammation as well as the pain and swelling that come with it. Additionally, it may be beneficial for rheumatoid arthritis, a condition marked by pain and inflammation in the muscles and joints as a result of autoimmune reactions.(Bhownik et al,2010).

Neem for Infections:

Neem may be able to treat dengue illness by inhibiting the dengue virus's development. It may prevent the coxsackie B virus from replicating, which is a family of viruses that can cause everything from upset stomachs to serious illnesses in people. Neem leaf has long been used to treat viral illnesses including smallpox and chickenpox. .(Bhownik et al,2010). To support such statements, more research is necessary.Skin infections and bacterial infections: Recent research has concentrated on the antibacterial properties of neem in the mouth, particularly in relation to tooth cavities and

gum disease. (Bhownik et al,2010). According to studies, neem may possess antifungal properties that could aid in the treatment of fungal infections such as ringworm, athlete's foot, and candida, which is also known as a yeast infection or organism that causes thrush. A fungal illness called thrush can affect the mouth, throat, or other areas of the body. (Bhownik et al,2010).

Neem for Cancer:

Neem's flavonoids and other constituents may prevent cancer from progressing. Increased levels of flavonoids may slow the progression of cancer, according to several studies.⁴ Skin, breast, lung, oral, stomach, liver, colon, and prostate cancers are just a few of the human cancers that neem and its extracts may be able to combat.(Bhownik et al,2010). To demonstrate its potential use, however, a great deal more thorough research is needed.

Neem for Liver:

Neem may have some effect on liver protection, which may help to facilitate blood purification. By stabilizing serum marker enzyme levels and raising antioxidant levels, such as those found in natural carotenoids, vitamin E, and C, neem leaf may help lessen liver damage brought on by toxins. These antioxidants may prevent damage and aid in the neutralization of free radicals.(Bhownik et al,2010)..

Neem for Immunity:

Neem's ability to stimulate the immune system may be its most significant potential usage. It may benefit lymphocytic and cell-mediated immune systems, particularly "Killer T" cells. These cells may release harmful compounds into other microorganisms, viruses, etc., thereby aiding in their demise (Bhownik et al,2010).

Gap between Traditional and Modern Herbs:

While traditional herbal medicines have been used for millennia by many different cultures, there is a noticeable discrepancy between their traditional use and the expected benefits, particularly when contrasted with contemporary medicine's more standardized approach (Rastogi et al., 2019). The differences arise from several variables that impede the appropriate application of herbs for the best results.Examining this issue reveals a complex interplay of factors such as the lack of standardized dosages, insufficient scientific validation, and the intricate nature of individual responses to herbal treatments.

The lack of standardized dosages in traditional herbal therapies is a basic problem that contributes to the efficacy gap (Ekor, 2014). Precise dosages of active substances are carefully determined and tested in modern medicine to ensure consistency and efficacy. Traditional herbal medicines, on the other hand, frequently lack these measurable indicators, which causes dosage inconsistency. The various preparation techniques used by people in various cultures and geographical areas worsen this lack of standardization. As a result, people may encounter varying degrees of success, which makes it difficult to set trustworthy expectations about the

advantages of herbal remedies.Another important area in which traditional herb usage is inadequate is scientific confirmation (Posadzki et al., 2013). Clinical trials and extensive research are conducted in modern medicine, giving it a strong basis for safety and efficacy. On the other hand, a lot of traditional herbs have not been well examined by science, which makes it difficult to develop evidence-based recommendations for their use. The lack of thorough research implies that the effectiveness and safety of herbal treatments are still unknown, which makes it challenging for people to utilize them wisely.

One important aspect affecting the efficacy gap is individual reactions to traditional herbs. The way that people react to herbal remedies can be greatly influenced by their genetic makeup, general health, and pre-existing medical issues (Gurib-Fakim, 2006). Contemporary medicine considers these variables while developing treatments, customizing them to meet the needs of each patient. On the other hand, traditional herbal medicine frequently takes a more generic approach, ignoring the subtle differences between individual cases. This lack of customization could lead to different reactions from people, which would increase the disparity in how effective people believe herbal medicines to be.A thorough and multifaceted approach is required to close this gap and realize the full potential of traditional herbs (Heinrich et al., 2020). To determine the safety and effectiveness profiles of traditional herbs, a great deal of investigation and scientific confirmation are first and foremost required. This entails carrying out thorough research, including clinical trials, to guarantee that herbal therapies satisfy the identical criteria for proof as contemporary medications.The development of standardized procedures for the formulation and dosage of herbal treatments is also urgently needed. This would entail creating precise protocols for the planting, harvesting, and processing of herbs in order to guarantee uniformity in their potency and composition. Standardization can also improve findings' repeatability, enabling users of herbal medicines to anticipate more consistent results.Furthermore, it's critical to spread the word about the value of informed herbal practices. This entails teaching medical professionals and the broader public about the possible drawbacks and advantages of using herbal treatments. People who are better informed are able to make decisions by taking into account things like appropriate dosage, possible drug interactions, and the value of speaking with medical professionals. In conclusion, a combination of scientific validation, standardized techniques, and raised awareness can help close the gap between traditional herb usage and optimal efficacy. It is possible to combine the accuracy and dependability of modern medicine with the traditional herbal wisdom of herbal medicine by conducting thorough research, developing clear protocols, and encouraging knowledgeable herbal practices. This will guarantee that people can

Table 1. Commonly used plants as herbal drugs

Plants name	Plants parts use in disease
Aloe vera	The peelings of the leaves are used in skin burn and also used in facial creams
Kalmegh	The plant is used for malarial fever
Bhandari	Leaves are used in cough and cold
Dhawra	Leaves are used in diarrhea.
Pilikatari	The extract is used in various skin diseases
Neem	Bark is useful in malarial fever
Punarnava	The plant is used in urinary troubles and in skin diseases
Sadabahar	The leaves and flowers are used to reduce sugar level.
Nagarmotha	The tubers are used in urinary and heart troubles
Aka Bedu	The plant is used for body pain relief
Tulsi	The leaves are used to cure cough, cold, and ulcers
Nirgundi	The extract of the leaves is used in body pain

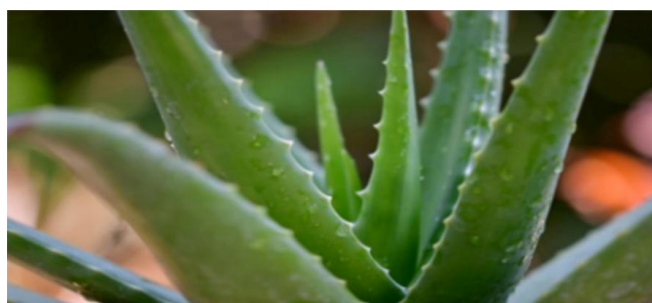


Figure 1. Aloe Vera



Figure 2. Tulsi plant

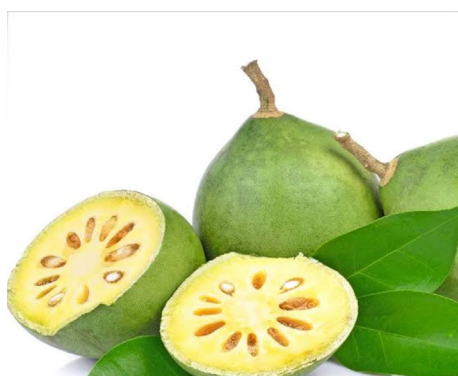


Figure 3. Bael Fruit

Table 2. List of Medicinal Herbs in treatment of Human Disease

Herb	Scientific Name	Diseases Treated	Formulation and Usage	Effectiveness and Mechanism
Tulsi	Ocimum sanctum	Cold, Cough, Asthma, Fever, Immunity Booster	Tulsi leaves can be chewed raw or consumed as a tea. Tulsi extract in alcohol (tincture) may be used for respiratory issues. It is effective in boosting immunity and has antimicrobial properties.	Tulsi boosts immunity through its anti-inflammatory and antioxidant properties. It helps alleviate respiratory issues and acts as a natural remedy for cold and cough.
Bael	Aegle marmelos	Gastric Related Disorders	Bael fruit pulp or juice can be consumed. Bael formulations help in digestion and treat gastric issues.	Bael has digestive and anti-inflammatory properties, promoting healthy digestion and relieving
Night Jasmine	Cestrum nocturnum	Insomnia, Anorexia, Blood Purification	Night Jasmine flowers can be used in a decoction or as an essential oil for aromatherapy. It aids in blood purification and helps in sleep disorders and appetite issues	Night Jasmine has sedative properties, aiding in insomnia. It also acts as a blood purifier and appetite stimulant
Brahmi	Bacopa monnieri	Memory Booster, Nerve Related Disorders	Brahmi powder or extract can be consumed. It enhances memory and cognitive function, helping with nerve-related disorders.	Brahmi supports nerve health and cognitive function. It improves memory and concentration by enhancing the transmission of nerve impulses.
Aloe Vera	Aloe barbadensis miller	Skin Related Disease, Burns, Hair Loss	Aloe vera gel can be applied topically for burns and skin issues. Aloe vera juice or gel promotes hair health.	Aloe vera has anti-inflammatory and wound-healing properties. It moisturizes the skin, accelerates wound healing, and nourishes hair follicles.
Kal Megh	Andrographis paniculata	Preventive against Malaria	Kal Megh extract can be taken for its antimalarial properties.	Kal Megh has antimalarial properties and helps in preventing and treating malaria.
Ashoka Tree	Saraca asoca	IVS, Menstrual Disorders	Ashoka bark decoction can be consumed. It is effective in managing female reproductive system issues.	Ashoka helps in managing irregular menstrual cycles and supports overall reproductive health.
Bhringraj	Eclipta alba	Hair loss	Bhringraj oil or powder can be applied to the scalp.	Bhringraj promotes hair growth and reduces hair fall by nourishing the scalp and strengthening hair roots.
Hadjod	Cissus quadrangularis	Treating Fracture, Osteoporosis	Hadjod extract or powder can be consumed. It supports bone health and aids in fracture healing.	Hadjod contains compounds that enhance bone metabolism, aiding in fracture healing and preventing osteoporosis.



Figure 5. Neem Plant



Figure 3. Night Jasmine Treatment



Figure 4. Ashoka tree

consistently and successfully utilize these herbs for their intended purposes.

Future prospects of Medicinal Plants

Given that there are over 500,000 plants in the globe and that the majority of them have not yet been studied for their potential medicinal benefits, medicinal plants have a bright future ahead of them. These hidden benefits could be crucial to the direction of both current and future research. (Choudhary et al,2015). Medicinal herbs have been crucial to the evolution of human civilization, as seen in various faiths and rituals (Hosseinzadeh et al,2015). Various of the various types of contemporary medications, including aspirin, are derived indirectly from medicinal plants. Many food crops, like garlic, have therapeutic properties. Understanding plant toxicity and defending people and animals against natural poisons are two benefits of studying medicinal plants. Plants produce secondary metabolites that provide them their therapeutic properties. A growing number of people are This interest may stem from a number of things, such as the demand for therapeutics and the astounding diversity of naturally occurring substances' chemical structures and biological activity. Secondary metabolites that naturally occur, the use of novel bioactive natural compounds as biochemical probes, the creation of sensitive and novel methods for identifying naturally occurring biologically active products, enhanced methods for isolating, purifying, and structurally characterizing these active components, and developments in meeting the need for complex natural product supply (Clark et al,1996). The World Health Organization (WHO) has established protocols, standards, and guidelines for plant medicines in recognition of the value of traditional medicine. Agro-industrial technologies must be used for the production of herbal medicines as well as for the processing and cultivation of medicinal plants (WHO,1993) becoming interested in the study of natural product chemistry, keeping this in mind.

Conclusion:

In summary There is a bright future for medicinal plants because there are around 500,000 plants in the globe, the majority of which have not yet been studied for their potential health benefits. These untapped resources could play a critical role in both current and upcoming research. Medicinal herbs have been crucial to the evolution of human civilization, as seen in various ceremonies and faiths. various of the various types of contemporary medications, like aspirin, are derived indirectly from medicinal plants. Many food crops, like garlic, have therapeutic effects. Understanding plant toxicity and shielding people and animals from natural poisons are two benefits of studying medicinal plants. Medicinal plants are part of a large category of plants that are very interesting because of their nutritional, cosmetic, and pharmaceutical uses. Numerous variables, including as the demand for therapeutics and the amazing diversity of chemical structures and biological activity,

may contribute to this interest. There are no toxicity or adverse effects from herbal drugs. The number of people suffering from conditions including diabetes, cancer, rheumatism, inflammation, jaundice, hepatic blockage, pain, colds, and coughs is on the rise in many countries at the moment. These illnesses can be successfully treated with herbal remedies. Many of the basic needs that humans have are met by plants. However, unrestricted wild gathering and human effect pose a threat to medicinal plants. Therefore, it is advised that intentional efforts are crucial for a steady supply.

Author contributions

A.S.D. and M.K.A.B. contributed equally to this work. A.S.D. led the research design and manuscript writing, while M.K.A.B. was instrumental in data analysis and interpretation.

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Competing financial interests

The authors have no conflict of interest.

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