



ROLE OF PLANTS IN MEDICINE : TIME TO GO TO NATURE

Medicinal Plants

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ABSTRACT

Now a days covid 19 is become pandemic . It attacks people with low immune systems and people especially people of under and over ages. Everyone wants to survive this disease. As Covid-19 cases in India are increasing rapidly, there has also been an increase in the intake of immunity boosters. For increasing the immunity of body most of the peoples return to the natural things in form of plant based medicines, kadha etc. This article focused on that type of plants those show different type of biological activities to prevent us a number of diseases and also work as immunity boosters.

KEYWORDS

bioactive compounds, ayurvedic medicines, immunity, antioxidant

INTRODUCTION

Plants are one of the most important sources of medicines in world. Today the large numbers of drugs in use are derived from plants. Bioactive compounds are extra nutritional constituents present in small amounts in plants. They reinforce the immune system, combat oxidative stress, and reduce the risk of a number of diseases, especially cancer, diabetes, and cardiovascular diseases. Due to presence of various bioactive compounds a number of plants used as antioxidant, anti-inflammatory, anti microbial, anticancer, antidiabetic, antifungal, antiviral, Antinephrotoxicity, Immunomodulatory and Growth Promoting and Neuroprotective Effects. Latest research investigation observed that the bioactive and antioxidant potentials of these plants are attributed to the presence of polyphenols, flavonoids, lignins, alkaloids, terpenoids, carotenoids, vitamins, and so forth [1].

Tulsi



Ocimum sanctum is the botanical name of plant Tulsi. It is commonly known as Vishnu-Priya, "Mother Medicine of Nature" and "The Queen of Herbs," Tulsi The leaves, seeds and root of this plant have been used in homegrown ayurvedic medicine. Tulsi has two varieties –Black (Krishna Tulsi) and Green (Ram Tulsi). Tulsi have some health promoting properties such as luster to the complexion, sweetness to the voice and fostering beauty, intelligence and helpful for adapting to stress.

tulsi is recommended as a treatment for a range of conditions including anxiety, diarrhoea, fever, dysentery, arthritis, eye diseases, indigestion, hiccups, vomiting, gastric, cardiac and genitourinary disorders, back pain, skin diseases, ringworm, insect, snake and scorpion bites and malaria.[2,3]

tulsi has a unique combination of actions that include: Antimicrobial (including antibacterial, antiviral, antifungal, antiprotozoal, antimalarial, anthelmintic), mosquito repellent, anti-diarrheal, antioxidant, anti-cataract, anti-inflammatory, chemo preventive, radio protective, hepato-protective, neuro-protective, cardio-protective, anti-diabetic, anti-hypercholesterolemia, anti-hypertensive, anti-carcinogenic, analgesic, anti-pyretic, anti-allergic, immunomodulatory, central nervous system depressant, memory enhancement, anti-asthmatic, anti-tussive, diaphoretic, anti-thyroid, anti-fertility, anti-ulcer, anti-spasmodic, anti-arthritis, adaptogenic, anti-stress, and anti-coagulant activities.[4,5]

Tulsi Plant is useful in the treatment of cold, cough, malaria, dengue, bronchitis, asthma, sore throat, influenza, heart disorders, eye diseases, mouth infections, insect bites, stress, and kidney stones etc[6]

Tulsi also helps to prevent cancers caused by toxic compounds by reducing DNA damage[7] and inducing apoptosis in precancerous and cancerous cells, thereby reducing the growth of experimental tumors and enhancing survival.[8].

Tulsi's unique combination of antibacterial antioxidant, anti-inflammatory and analgesic activities also makes it useful in wound healing.

These biological activities are in Tulsi plant due to presence of different type of phytochemicals. Seeds of *Ocimum Sanctum* contain Linoleic acid, Linolenic acid, Oleic acid, Palmitic acid, Stearic acid. Leaves of *Ocimum sanctum* contain Benzaldehyde, Borneol, Bornyl acetate, Camphor, *cis*- α -Terpineol, Cardinene, D-Limonene, Eucalyptol, Eugenol, Farnesene, Farnesol, Germacrene, Heptanol, Humulene, Limonene, *n*-butylbenzoate, Oleic acid, Sabinene, Selinene, Phytol, α -Pinene, β -Pinene, and linalool.

Neem



Neem (*Azadirachta indica*) is a member of the Meliaceae family and each part of the neem tree has some medicinal property. Its role as health-promoting effect is attributed because it is rich source of antioxidant. Neem plant is now considered as a valuable source of unique natural products for development of medicines against various diseases.

Neem, and its formulated products used in treatments of cancer, skin diseases, digestive disorders and AIDS [9]. It is found that extracts from leaf, flower, and stem bark hold high antioxidant activity. Study showed that immunomodulator and anti-inflammatory effect of bark and leave extracts and antipyretic and anti-inflammatory activities of oil seeds [10].

Numerous biological and pharmacological activities have been reported including antibacterial, antifungal, and anti-inflammatory. Earlier investigators have confirmed their role as anti-inflammatory, antiarthritic, antipyretic, hypoglycemic, antigastric ulcer, antifungal, antibacterial, and antitumour activities. Aqueous leaf extract offers antiviral activity against Vaccinia virus [11], Chikungunya and measles virus in vitro. Many results showed that leave extracts of

Azadirachta indica promote wound healing activity through increased inflammatory response and neovascularization [12].

Clinical studies with the dried neem leaf extract indicated its effectiveness to cure ringworm, eczema and scabies.

Different study showed Hepatoprotective, Antidiabetic, Antimicrobial, antifungal, antiviral, Antinephrotoxicity, Immunomodulatory and Growth Promoting and Neuroprotective Effects.

Several active chemical compounds are present in the selected plant, including glycosides, dihydrochalcone, coumarin, tannins, zadirachtin, nimbin, nimbidine, diterpenoids, triterpenoids, proteins, carbohydrates, sulphurous compounds due to plant show different biological activities. In which, the most commonly active compounds found in neem are azadirachtin, nimbin and nimbidine [13].

Aloe Vera



Aloe vera (*Aloe barbadensis* Miller) is a perennial succulent xerophyte, which develops water storage tissue in the leaves to survive in dry areas of low or erratic rainfall. The innermost part of the leaf is a clear, soft, moist, and slippery tissue that consists of large thin-walled parenchyma cells in which water is held in the form of a viscous mucilage. Many of the medicinal effects of aloe leaf extracts have been attributed to the polysaccharides found in the inner leaf parenchymatous tissue [14].

Aloe vera contains several biologically active constituents, including vitamins, minerals, saccharides, amino acids, anthraquinones, enzymes, lignins, saponins, and salicylic acids [15]. In addition, *Aloe vera* contains products of the isoprenoid pathway, such as carotenoids, steroids, terpenes, and phytosterols [16].

Various extracts of *Aloe vera* are traditionally used and their application used to cure arthritis, skin cancer, burns, eczema, psoriasis, digestive problems, high blood pressure, and diabetes [17]. Many studies have shown that treatment with whole *A. vera* gel extracts resulted in faster healing of wounds [18]. Clinical studies have suggested that *A. vera* gel may act as a safe antihyperglycemic and antihypercholesterolemic agent for type 2 diabetic patients without any significant effects on other normal blood lipid levels or liver/kidney function. *A. vera* contains substantial amounts of antioxidants including α -tocopherol (vitamin E), carotenoids, ascorbic acid (vitamin C), flavonoids, and tannins so aloe vera work as antioxidant in treatment of various diseases. Aloin, an anthraquinone is main ingredient of *Aloe*, derived from *A. vera* leaves, has been shown to possess anticancer potential activities, as it inhibits tumor angiogenesis and growth via blocking signal transducer and activator of transcription 3 activation, with the potential of a drug candidate for cancer therapy [19]. Many reports have suggested that *A. vera* gel has antiviral activity that prevent virus adsorption, attachment, or entry to the host cell. Preliminary trials have suggested that *A. vera* consumption may be of help to HIV-infected individuals as it improves the immune system by increasing the CD4 count [20].

Aloe vera traditionally used as anti-inflammatory, antibacterial, antiviral, antifungal, antioxidant, laxative, immunity, hypoglycaemic, gastroprotective, antitumor, antimicrobial, hepatoprotective, antidiabetic and show immunomodulatory effect.

Muco-polysaccharides help in binding moisture into the skin. The

amino acids also soften hardened skin cells and zinc acts as an astringent to tighten pores.

The Aloe gel gives cooling effect and also acts as a moisturizing agent. It also has role in gerontology and rejuvenation of aging skin. Aloe vera is used as skin tonic in cosmetic industry. Aloe vera gel has also been reported to have a protective effect against radiation damage to the skin.

Giloy:

Giloy have botanical name *Tinospora cordifolia* and also Known, as *Amrita*, in Sanskrit which translates to 'the root of immortality'. Giloy has been shown to possess antidiabetic, antioxidant, antihypertoxic, and immunomodulatory properties [21,22]. The aqueous extract of *T. cordifolia* has been shown to protect against *Escherichia coli* and *Staphylococcus aureus* infections [23,24]. It regulates and strengthens immunity and, reports say it is a source of biologically active compounds like alkaloids and lactones. It balances blood sugar levels and detoxes and improves skin. Giloy contains anti-arthritis properties that help to treat arthritis.

It helps to reduce respiratory problems like frequent cough, cold, tonsils due to its anti-inflammatory benefits. It also tackles respiratory and breathing problems. These are also major signs of the novel corona virus infection. Giloy work as antioxidant and help in improving the vision. It also works as antidiabetic, antiaging and boosting immunity.

The plant also bears anti-inflammatory, anti-tuberculosis; wound healing, immunoprotective, hepatoprotective, anti-osteoporotic, anti-cancer, anti-tumor, anti-malaria, cardio protective nature and many more properties.

The aqueous extract of *T. cordifolia* stem has shown to produce immunological activity due to the presence of arabinogalactan. The plant is also known for its antispasmodic, antipyretic, antineoplastic, hypolipidemic, hypoglycemic, and immunopotentiating, properties. It is also used in general debility, digestive disturbances, loss of appetite and fever in children, dysentery, gonorrhoea, urinary diseases, viral hepatitis, and anaemia.

Narayanan *et al.*, have reported antibacterial activity of plants to extract against *Escherichia coli*, *Proteus vulgaris*, *Salmonella typhi*, *Salmonella paratyphi*, *Salmonella typhimurium*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Enterobacter aerogenes*, *Shigella flexneri*, *Staphylococcus aureus* and *Serratia marcescens* [25].

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