

Medicinal plant as a natural immunity booster for COVID19- A review

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ABSTRACT

Background: The standard treatment against COVID-19 is presently lacking. It is important to suggest that people should use some supplements to boost their immune systems. The best way is to strengthen our immunity naturally with the help of medicinal plants/herbs. **Objective:** The objective of this review is to investigate the immunity-boosting medicinal plants c herb in support of maintaining health in the time of Corona. **Methods:** Pubmed and Google Scholar were searched for relevant information regarding medicinal immunity-boosting plants their uses, and properties. **Results:** A total of 17 articles were selected for review which included information about the immunity boosting plants and their effects on health. **Conclusion:** There are other certain ways to boost the 'immune system' such as active lifestyle, physical exercise, healthy diet, relaxation, and sound sleep. Comprehensive scientific studies required to make medicinal plants available as robust medicine to fight against viral diseases like COVID-19.

Key words: Medicinal plants, importance of immunity in Covid 19, lifestyle, diet

The outbreak of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) or Covid-19 was reported for the first time in Wuhan, of Hubei province in China in December 2019 [1]. The outbreak was referred to as the outbreak of pneumonia of unknown cause. It was confirmed by Chinese scientists that the disease outbreak was started zoonotic transmission events associated with a large seafood market but soon it also transferred from the person to person and took the face of "Pandemic" all over the world [2]. The standard treatment against COVID-19 is presently lacking. Only a few antiviral agents, some antibiotics, and anti-inflammatory agents are being used for the treatment [1].

As there is no standard treatment against COVID-19 all preventative measures such as hand cleaning with soap and sanitizer, mouth, and nose coverage with mask during sneezing and coughing are being advised to stop the spread of COVID-19 [3]. The observation of the death pattern of

COVID 19 patients revealed that early deaths were in older people, probably because of the poor immunity, which promotes faster progress of COVID-19 [4]. Therefore, it is significant to boost our immune system. It is important to suggest that people should use some supplements to boost their immune systems.

Plants materials are used in Ayurvedic methods of the treatment. Generally, they are non-toxic and without any side effects. Various parts of medicinal plants are popular for their antiviral activities and immunity strengthening capacity [5]. Pandemic such as COVID19 teaches few important lessons to mankind; such as the importance of hygiene and health. In times, when the world is busy fighting deadly coronavirus, it is necessary to take extra precautions to keep yourself protected from getting infected. Therefore, you need a healthy and strong immune system. The best way is to strengthen our immunity naturally with the help of medicinal plants/herbs. Mother

nature has blessed us with plenty of medicinal plants that help in fighting and curing the vast range of diseases. Ayurveda, the ancient medical science had stated long ago that plant extracts could do a lot to strengthen the body. Some of the important medicinal plants are as follows that potentially can help in boosting immunity against COVID 19:

Drumstick tree (*Moringa oleifera*): The most important nutrients we need for immunity are Vitamin C, Vitamin A, and protein – all of which are abundant in Moringa. This is a native Indian vegetable that has antiviral, antifungal, and anti-inflammatory properties. It contains more Vitamin C than oranges. Vitamin C is the chief nutrient that our bodies need to build strong immunity. And during the COVID-19 pandemic, it should be your go-to herb for immunity strengthening. The pods of trees are cooked as food in various states of India. It also shows a protective effect in the prevention of in vitro glucose-induced cataract [6].

Amla (*Phyllanthus emblica*): *Phyllanthus emblica L.* (Synonym: *Emblica officinalis*) is a medium-sized deciduous tree belonging to the family Euphorbiaceae, commonly known as Indian gooseberry, medicinal plants, having great elementary and therapeutic importance. It helps detoxify the entire organ system for better health and immunity. Amla fruits are reputed to contain high amounts of vitamin C (Ascorbic acid). It is also loaded with polyphenols that are known to fight against the development of cancer cells. And that's not all. Amla is also helpful in managing diabetes and reducing cholesterol levels. It also contains numerous phytoconstituents viz. a higher amount of polyphenols like gallic acid, ellagic acid, different tannins, minerals, vitamins, amino acids, fixed oils, and flavonoids like rutin and quercetin [7].

Ashwagandha (*Withania somnifera*): It is a small shrub with pale green flowers, simple leaves, and red berries. More commonly known as ashwagandha, Indian ginseng. Most of the benefits from Ashwagandha are from the root and the leaves. The leaves are most commonly used in teas preparation. The root can be taken in many ways but it's most commonly dried, powdered, and taken as a supplement these days. The extract of Ashwagandha can reduce blood sugar levels, cortisol levels, symptoms of depression, and inflammation. It helps increase strength, muscle mass, and improve brain function as well. Ashwagandha improves the body's defense against disease

by improving the cell-mediated immunity. It also possesses potent antioxidant properties that help protect against cellular damage caused by free radicals. It also shown inhibitory properties against many cancers, (breast, colon, prostate, colon, ovarian, lung, brain), along with their mechanism of actions and pathways involved [8].

Giloy/ Guduchi (*Tinospora cordifolia*): Tinospora herb has heart-shaped leaves and is been used and advocated in Indian medicine for ages. Drinking fresh Giloy juice helps to improve immunity. It enhances the activity of macrophages (the cells responsible for fighting foreign bodies as well as microorganisms) and thus helps in early recovery. Giloy is also popularly known for its anti-inflammatory benefits and helps reduce respiratory problems like frequent cough, cold, tonsils. Giloy powder, Kadha (tea) or tablets can also be used for various skin problems as it helps to remove toxins from the body. It also shows pharmacological properties like immunomodulation, anticancer, hepatoprotective, and hypoglycemic [9].

Neem (*Azadirachta indica*): Neem helps boost your immune system while cooling down your body internally. It possesses both anti-bacterial and anti-fungal properties that help keep your skin clean, radiant and healthy. Neem also has blood-purifying properties; boosting both the lymphocytic and cell-mediated immune systems. Regular consumption of Neem capsules can also avert high fever, malaria, viral flu, dengue, and other infectious diseases. More than 70 different terpenoids, or terpenes, have been identified in different parts of the Neem tree. One single Neem terpenoid, beta-caryophyllene, has been shown to have anti-inflammatory, antioxidant, and pain-reducing benefits. Over 300 structurally diverse constituents, one-third of which are limonoids including nimbolide, azadirachtin, and gedunin have been identified as modulators of cell signaling pathways [10].

Garlic (*Allium sativum*): Garlic is from the onion family-Allium. It is an essential element of most cuisines around the world. Garlic is loaded with so many health benefits if consumed in the right way. *Allium sativum* is a functional food well-known for its immunomodulatory, antimicrobial, anti-inflammatory, antimutagenic, antitumor properties. Its antiviral efficiency was also demonstrated. It is a rich source of vitamins and minerals such as Vitamin B1, B2, B3, B6, folate, magnesium, phosphorus, sodium, zinc, iron, manganese, calcium among others. What makes garlic a

magical immunity booster is the presence of Allicin, which helps in fighting several ailments. Garlic is an excellent natural source of bioactive sulfur-containing compounds and has promising applications in the development of functional foods or nutraceuticals for the prevention and management of certain diseases [11].

Tulsi (*Ocimum sanctum*): In the traditional system of medicine, different parts of *Ocimum sanctum* have been recommended for the treatment of different diseases. This herb is loaded plenty of with vitamin C, antioxidants, antiseptic and antiviral properties. Tulsi has been used as a natural hand sanitizer due to its anti-microbial activities. One of the most common home remedies for the common cold or sore throat is Tulsi tea. Tulsi can help to strengthen the respiratory system due to the effects it has on the chemical changes in the body. Tulsi has been found to address physical, chemical, metabolic, and psychological stress through a unique combination of pharmacological actions. Also, the crude extract and terpenoid isolated from the leaves of *Ocimum sanctum* has shown promising antiviral properties against H9N2 virus [12].

Cinnamon (*Cinnamomum verum*): Cinnamon has also been used for its medicinal properties for thousands of years. Made from the inner bark of the Cinnamomum tree, its use has been dated as far back as ancient Egypt. Cinnamon is an immune simulator, protecting the body from bacterial or viral attacks. It helps your body fight infections and repair tissue damage. All the antioxidants are super powerful when it comes to bringing those anti-inflammatory properties.

Cinnamon also gives us manganese, calcium, fiber, and iron. Cinnamon also fights inflammation and helps ward off infections and heal damaged tissue. Containing large amounts of polyphenol, cinnamon outranked “superfoods” like garlic and oregano in a study comparing the antioxidant activity of 26 spices. Many studies have shown that cinnamon shows antimicrobial, antiviral, antifungal, antioxidant, antitumor, antihypertensive, antilipemic, antidiabetic, gastroprotective, and immunomodulatory effects [13].

Turmeric (*Curcuma longa*): Turmeric is a pungent Asian spice with a fascinating heritage. One of the most notable compounds found in turmeric is curcumin and it also shows antimicrobial and antiviral activity. As well as giving turmeric its saffron coloring, curcumin is extracted

from turmeric root and sold as a popular dietary supplement. Turmeric is known for its abundance of anti-inflammatory effects. Curcumin is a potent immunomodulatory agent and has been known to be highly effective as a treatment. Curcumin has been shown to inhibit the replication of some types of viruses, including dengue virus, hepatitis B, and Zika virus. The compound has also been found to have several significant biological effects, including antitumor, anti-inflammatory, and antibacterial activities [14].

Onion (*Allium cepa*): Allium is a subfamily of monocotyledonous plants that includes hundreds of species such as garlic, onion, leek, chives, and more. Allium cepa is a naturally derived medication to cure nasal congestion and to improve the immune system. Onion contains vitamin C, sulfur, zinc, selenium, and most important quercetin. These potent nutrients make your immune system healthier and stronger. The flavonoid and antioxidant present in quercetin is loaded with antiviral properties. The vegetable is particularly high in vitamin C, a nutrient involved in regulating immune health. Also, the trace mineral selenium which stimulates immune function is found in higher concentrations in onions than in other veggies. Selenium may play a part in the management of viral inflammatory and allergic conditions [15].

Wild carrot (*Daucus maritimus*): The antiviral activities of extracts from *Daucus maritimus* seeds were investigated against the reverse transcriptase of human immunodeficiency virus (HIV) type 1 and a panel of RNA-dependent RNA polymerases of dengue virus, West Nile virus (WNV) and hepatitis C virus (HCV). The essential oils from flowers and roots of *Daucus carota L. ssp maritimus* were obtained by hydrodistillation and analyzed by a combination of Gas chromatography/Mass spectrometry, and Carbon-nuclear magnetic resonance. The antibacterial effect of them resulted in the inhibition of a series of common human pathogenic bacteria, and of some clinically and environmentally isolated strains with significant MIC and MBC values [16].

Black pepper (*Piper nigrum*): *Piper nigrum* has been extensively explored for its biological properties and its bio-active Phyto-compounds. It is crammed with antibacterial and anti-inflammatory properties, which keep infections at bay and also provide relief from the discomfort. It is used for both human and veterinary medicine in India for menstrual and ear-nose-throat

disorders in human and gastrointestinal disorders. It is also reported with antioxidant effects and help in dealing with some throat ailments [17].

CONCLUSION

There are other certain ways to boost the 'immune system' such as active lifestyle, physical exercise, healthy diet, relaxation, and sound sleep. Practically, the medicinal plants play a supplementary role in developing the immune system and fighting deadly viruses including COVID-19. Comprehensive scientific studies required to make medicinal plants available as robust medicine to fight against viral diseases like COVID-19.

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