



## Ayurvedic Perspective for Covid-19

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### Abstract

Because the entire globe is suffering from the COVID-19 epidemic, there has been a surge of attention in techniques to increase our immune power and therefore establish the first line of defense against the terrible virus. Therapeutic plants, shrubs, and medicines have been recognized for their therapeutic benefits from the classical era. As a result, therapeutic plants and herbs are playing an important role in decreasing the COVID-19 epidemic. It is also essential to eat nutrients in the form of formulations such as Tulsi, Amla, and Cumin, which will help your body fight infections. This study describes how common medicinal plants and herbs interact with COVID-19.

**Keywords:** Ayurvedic; Covid-19; Therapeutic; Medicines

### Introduction

The COVID-19 outbreak has resulted in devastating effects on global populations due to the rapid outbreak. Most severely affected are old age persons, children, and patients with a clinical history of respiratory disorders, diabetes, cancer, weak immune system, and other diseases. Because of relatively large amount of death with this disease and the unavailability of drugs, the whole world is battling hard to discover an effective therapeutic treatment for COVID-19 [1]. Coronaviruses are the viral ones that cause respiratory diseases, but they can also impact the gastrointestinal system and attack both living creatures extensively. Coronaviruses are single-stranded Virus that are extremely varied and were originally discovered in 1960. Coronavirus genotypes are mostly found in bats, although they can transmit to certain other forms of life [2]. In the current scenario of the non-existence of any established medicines, there may be potential antiviral herbals extracts, formulations, and immune booster herbal medicines that can be the potential remedy against viral infections. Although the patho-

genesis of COVID-19 is still not clear, persons infected with COVID-19 exhibit non-specific symptoms ranging from no symptoms (asymptomatic) to severe pneumonia and death. However, frequent symptoms are observed like diarrhea, lung damage, normal or decreased leukocyte counts [3-4].

Because the entire globe is suffering from a COVID-19 epidemic, it is a high scope in ways to improve our resistance to infection and therefore establish the first line of defense against the deadly virus. Therapeutic herbs have been noted as its therapeutic benefits throughout earlier civilizations. Therefore, Therapeutic natural compounds are helping to improve human resistance against the COVID-19 virus. It is also essential to take immunological and nutritional supplementation like vitamin A, B, iron, various minerals, which will help your body fight infections. Whenever the immunological system's response is insufficient, poor, or defective, it paves the way to illnesses like coronavirus or other illnesses such as hypertension, cardiovascular disease, or tumor [5].

A variety of therapeutically significant botanicals that can help in the fight over COVID-19, *Echinacea purpurea* (Purple coneflower), *Melia azadirachta* L. (Neem), *Scutellaria baicalensis* (Baikal Skullcap), *Salviamiltiorrhiza* (Red sage), *Cinnamomum verum* (Cinnamon) C, *Linum usitatissimum* L. (Flax Seed), *Phyllanthus emblica* L. (Amla), *Piper nigrum* L. (Black Pepper), *Cinchona officinalis* (Quinine), etc. Many herbs shown the high in polyphenols, nutrients, enzymes, carbs, essential fats, lipids, ions, corticosteroids, antihistamines, antifungal, and antimicrobial phytonutrients, that contribute to the restoration as well as the eradication of pathogens. the invaded viruses. Several Ayurvedic medicines are reported to have antiviral, antiplatelet, anti-inflammatory, anti-allergic, anti-fungal, hyperglycemic effects, and so on. This plant is high in flavonoids, tannins, steroids, glucoside quinones, sesquiterpenoid, and aromatic chemicals. Scientific researches on this drug may provide a new approach as well as insight for prevention, management, and development of new therapeutic entities to treat COVID-19. Mostly in present epidemic illness (COVID-19), most people with the severe infection are likely most sensitive to this virus and its severe consequences. Also, immune-enhancing herbs could be beneficial to the human body battle against COVID-19 diseases. Here we provide are view of some immune-boosting herbs and their important features with preclinical and clinical evidence of the antiviral actions. Many supplements basically from medicinal plants may help improve immune response [6].

Various medicinally important plants and herbs which can serve as a boon in the fight against COVID-19 e.g., Tulsi (*Ocimum sanctum*), clove (*Syzygium aromaticum*), Black paper (*Piper nigrum*), turmeric (*Curcuma domestica*), Giloy (*Tinosporacordifolia*), etc. Many herbs are good for the heart, vitamins, proteins, carbohydrates, dietary fibres, amino acids, minerals, steroids, alkaloids, antiviral, and antibacterial phytochemicals, which assist to rejuvenate the immune function and fight viruses. Many Ayurvedic medicines are known to have antioxidant, antiplatelet, anti-inflammatory, anti-allergic, antimicrobial, hyperglycemic effects, and so on. This plant is high in polyphenols, tannins, stimulants, sesquiterpene quinones, sesquiterpenoid, and heterocyclic chemicals. Scientific research on this drug may provide a new approach as well as insight for prevention, management, and development of new therapeutic entities to treat COVID-19, it is apparent that people with a severe infection are most vulnerable to this virus and its severe consequences. In this regard, immune-enhancing herbs may be helpful for the body to fight COVID-19 infection. Here we provide are view of some immune-boosting herbs and their important features with preclinical and clinical evidence of the antiviral actions. Many supplements basically from medicinal plants may help improve immune response [7,8].

## ayurvedic perspective for COVID-19

### *Echinacea purpurea* (Purple coneflower)

*Echinacea purpurea* (*E. purpurea*) is one of the most well-known herbal medicines in Europe and North America because it shows promising effects against viral infections. Its common name is Purple coneflower. The preparation of *E. purpurea* can be made of extracts, tinctures, teas, and sprays. Many Native Americans use this kind of herb for respiratory infections. It contains several bioactive compounds like chicoric acid and caffeic acids, alkyl amides, and polysaccharides. *Echinacea* species have an important role with the immune system due to their alkyl amide interacting with the cannabinoid receptors and immediately decrease its activity [9,10].

### *Melia azadirachta* L. (Neem)

Neem has a strong bitter taste known to cure many health disorders, taken orally in an empty stomach to flush out the toxins and kill worms in the stomach. The juice extract has been used to treat many skin infections. It is well for its anti-plasmodic activity against plasmodium spread by mosquitoes. Neem usage in traditional ways of curing diseases for more than two thousand years. Urinary, respiratory and digestive systems can be treated with the use of neem extracts to detoxify and enhance its functioning capacity. The bitter taste of the neem helps in clearing the mucous of the lung while having a *Melia azadirachta* common cold by the way of steaming and taken as preventive medicine for COVID-19. The inhibitory activity of Neem extracts on Papain-like protease (PLpro) of the novel coronavirus SARS-CoV-2 [11].

### *Scutellaria baicalensis* (Baikal Skullcap)

Baicalin, a major constituent of the plant, Bioactive compounds such as baicalin, wogonoside, are extracted for medicinal purposes from the root of this important medicinal plant *S. baicalensis*. It has been taken orally to treat many gastrointestinal diseases such as vomiting, and gastric problems. It is also known to treat respiratory problems that's why it is it has been researched and revealed that it is a potent medicine against coronavirus causing COVID-19. People with insomnia and hypertension are advised to take this medicinal drug. This baicalin plays a major role in inhibiting the proliferating of the HIV-1 virus. It Identifies the critical molecular features of flavones for their binding activity at human and SARS-CoV-2 enzymes [12].

### *Salvia miltiorrhiza* (Red sage)

The inhibitory potential of *Salvia miltiorrhiza* Bunge towards SARS-CoV-3CL (pro). *Salvia miltiorrhiza* Bunge ethanolic extract gives 60% inhibition of SARS-CoV-3CL (pro). It is having A dose-

and time-dependent inhibition of the SARS-CoV-2 PLpro activity in a slow-binding inhibition mechanism [13].

#### ***Cinnamomum Verum* (Cinnamon)**

The verum demonstrated antibacterial, immunomodulatory, plus antiretroviral action for Influenza virus, primarily via modifying ash content, albumin, flavonoid content, including proteolytic enzymes activity, as well as greatly increasing cytokine production. If combined with other natural products, *C. zeylanicum* aqueous extract demonstrated specific antiviral capability toward H1N1 and reduced disease virulence. The methanol extracts demonstrated immunostimulatory action, increasing plasma antibodies, macrophage indices, and leukocyte adhesion substantially. These were found to bring about steep declines in activation of a key regulator of pro-inflammatory cytokines, namely, transcription factor NF- $\kappa$ B (nuclear factor kappa-light-chain-enhancer of activated B cells and developing effective and safe antivirals to prevent and treat infection by the pathogen responsible, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [14].

#### ***Linum usitatissimum* L. (Flax Seed)**

Flax seed core exhibited viral action. It dramatically increased cellular proliferation in mammalian cells, resulting in autoimmunity. Anti-viral action demonstrated by blocking the effects of both specific antibodies and envelope antigens and also interfered with DNA replication. It was reported to have vasodilation properties in diabetes. An antiviral effect of flaxseed polyphenols mainly through a decrease in immune function induced by cells. It can activate NK cells, T cells and enhance the production of B cells, immunoglobulin (IgM), and ultimately strengthen the innate immunity against COVID-19 [15].

#### ***Phyllanthus emblica* L. (Amla)**

Amla has greatly reduced the immunosuppression impact of chromium in immune cells. Polyphenols derived by *Emblica* are reported to stimulate lymphocyte growth. Geraniin and isocorilagin both stimulated the immune system significantly. Amla methanol extracts immune responses were significantly decreased, whereas anti-inflammatory mediators were significantly elevated. The extracted component of *P. Emblica* exhibited antiviral activity, resulting in the prevention of early invasion via COVID virus adhesion and transmission, as well as the reduction of internal proliferation. [16,17].

#### ***Piper nigrum* L. (Black Pepper)**

Piperamides are derived from *P. nigrum* fruits. In a medication way, liquid extract of *P. nigrum* served as a powerful neutrophil regulator and greatly increased fibroblast production. It also demonstrated anti-inflammatory activity on ulceration. It is also known to act as an anti-inflammatory agent as the active content, i.e., piperine is found to inhibit the expression of IL6 and MMP13 and helps in reduced PGE2 in COVID Virus [18].

#### ***Nigella sativa* L. (Black Cumin)**

Nigellidine produced a biomass structure at the binding site (6LU7) to power ratings comparable to chloroquine or even greater than hydroxychloroquine and favipiravir, whereas a-hederin produced a carbon cluster just at the binding center (2GTB) to power rating comparable to chloroquine and higher than hydroxychloroquine and favipiravir. The active constituents of *N. Sativa* such as nigellidine and a-hederin have been identified as a potential inhibitor of SARS CoV-2 [19,20].

#### ***Cinchona officinalis* (Quinine)**

The *Cinchona* bark is rich in an alkaloid chemical called quinine which has antimalarial properties. Its other biological and clinical roles include anti-parasitic, anti-arrhythmic, antispasmodic, anti-protozoal, cardiogenic as it tones, balances and strengthens the heart, and as a bitter digestive aid to stimulate digestive juices. Antiviral properties of chloroquine were explored against SARS-CoV-1, which has structural similarity to the novel SARS-CoV-2. Chloroquine raising the pH of the host cell lysosomes and thus interferes with the virus strategy to acidify the lysosome, which is a requirement for the creation of autophagosomes (where a cell approaches to eat themselves). Treatment using chloroquine may enhance the treatment success rate, shorten the hospital stay and lower the mortality associated with COVID-19 [21].

### **Conclusion**

There are barely any countries that are left untouched by the COVID-19 pandemic. It is one of the greatest public health threats to date that needs to be controlled as soon as possible. The immune system in the human body holds a vital role to fight against an uncontrolled and morbid environment. Ayurvedic products made from medicinal plants hold the potential to boost the immune system. The current COVID-19 pandemic situation reveals that people with strong immunity have a higher recovery rate. The various medicinal plants addressed in this article are displayed together pleo-

tropic actions that have the ability to give an integrative strategy through antifungal, anti-inflammatory, and antioxidant properties immunomodulatory effects in COVID-19.

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