# Medicinal Plants and their Potential Role in Covid-19: An Overview

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***Abstract*** **- Herbal medicines are of high importance and hence are in great demand throughout the world because of their medicinal properties, safer use, wider and low-cost availability. A plant can be categorised as medicinal if any of its part contains therapeutic substances or the substances that can act as precursor for therapeutic chemical synthesis. The biological properties of plant species utilised all over the world are typically due to secondary metabolites generated by plants. COVID time period has witnessed the increased usage of medicinal plants and their products in order to improve immunity. There are number of plants having potential antiviral, antimicrobial, immunity booster etc roles which can be used to combat COVID situation. This review focuses on some commonly used traditional Indian medicinal plants with their potential; role to combat COVID situation.**

***Index Terms*** **- Therapeutic purpose, Alternative Medicine, Herbal medicine, COVID.**

## INTRODUCTION

Medicinal plant refers to a variety of plant species having therapeutic properties. These alternative medicines are considered as a rich source of components for medication discovery and synthesis. Furthermore, these plants play an important part in the formation of human cultures throughout the world. Some medicinal plants such as ginger, turmeric, garlic are used as condiments and flavouring agents. Some plants are considered important source of aspirin and toothpastes. Approximately 28,187 plant species are thought to have been used as traditional remedies by diverse civilizations throughout the world for at least a century [Inoue, M., et al 2019; Allkin, B. 2017].

In general, alkaloid from the plant has a noticeable effect on the central nervous system of humans, even when just a tiny amount of alkaloid is consumed. Plants that contain alkaloids are restricted in their usage or are on a list of dangerous plants. Those alkaloids, on the other hand, are frequently employed as components in medical and pharmaceutical goods. Several excellent research to uncover beneficial alkaloids have been described. For example, Morphine has analgesic and anesthetic action, Ephedrine increases blood pressure, Reserpine lowers blood pressure, Vinblastine shows antileukemic effect etc [Inoue, M., et al 2019].

Medicinal use of plants is widely accepted and practiced all over the world however in India many herbs and their parts are part of kitchen. Moreover many formulations such as chyawanprasha are used as nutritional source depicting the depth of these medicinal plants in our daily lives irrespective of the religion or financial status. Several medicinal plants, their parts, combinations and their formulations having potential antiviral, anti-inflammatory, anti microbial and immunomodulatory roles can have potential role in covid-19, we enlist here some of the commonly available important plants with their potential roles against COVID-19 [Ahmad, S., et al . 2021].

## COMMONLY USED INDIAN MEDICINAL PLANTS AGAINST COVID-19

Allium sativum L. (Garlic)

Several researches [Kamel, R. O. A., et al. 2015] have confirmed the immune-modulatory roles of garlic stating its role in enhancing immune system activity. By reducing the proportion of eosinophils, lavage and serum IgG1 levels, and perivascular inflammation in BALB/c mice, an old extract of A. sativum was shown to modulate airway inflammation. According to the findings, aged garlic extract can reduce allergic airway irritation [Zare, A., et al. 2008].

Fresh raw garlic extract reduced the synthesis of interleukin-1 (IL-1), prostaglandin E2 (PGE2), leukotrienes (LT D4 and E4), nitric oxide (NO), and interleukin-6 (IL-6) in RAW264.7 cells stimulated

with lipopolysaccharide and showed anti-inflammatory effects [Jeong, Y. Y., et al. 2016; Ahmed, S., et al. 2021].

Cinnamomum verum J.Presl. (Cinnamon)

In hens, C. verum essential oil and powder possess anti-viral, immunostimulant, and anti-oxidant action, primarily through altering total protein, globulin, total antioxidant capacity, and lysozyme activity, as well as dramatically increasing phagocytic activity [Islam, M. R., et al. 2017; Ahmed, S., et al. 2021].

Another study found that when C. zeylanicum essential oil was combined with other essential oils, it had antiviral activity against the H1N1 and HSV1 viruses. For both H1N1 and HSV1, viral infectivity was reduced by 99 percent after 60 minutes of contact time and by more than 99.99 percent after 60 minutes [Brochot, A., et al., 2017; Ahmed, S., et al. 2021].

Curcuma longa L. (Turmeric)

Curcumin's inhibitory effectiveness against HIV protease and integrase, as well as its synergistic impact with other medications, has been discovered to be useful in the treatment of various viral diseases including AIDS.

Hepatitis B, zika, dengue fever, chikungunya, hepatitis C, and other viruses are all inhibited by curcumin. COVID-19 is associated with fulminant hypercytokinemia, respiratory distress syndrome, and multiorgan failure, which is the major cause of death [Gupta, H., et al. 2020; Richart, S. M., et al. 2020; Prasad, S., et al. 2015]. Curcumin is a natural PPAR-ligand that suppresses the inflammatory process by lowering cytokine production, perhaps protecting the lungs against COVID-related lung damage [Ciavarella, C., 2020; Gupta, H., et al. 2020].

Piper nigrum L. (Black Pepper)

Black pepper has been well known for its antimicrobial and anti-inflammatory activity. The study presented piperine as a potential natural molecule which can control viral proliferation and suggested its potential role against SARS-CoV-2 infection [Choudhary, P., et al. 2020].

Withania somnifera (L.) Dunal (Ashwagandha)

Ashwagandha has been shown in several researches to have antiviral and immunomodulatory properties. An *in silico* research published recently showed that Withaferin-A can inhibit RNA polymerase and posses putative antiviral role against SARS-CoV-2 with a better binding energy in comparison to hydroxychloroquine and other SARS-CoV-2 medicines. Another work on withanone found that breaking electrostatic interactions between the RBD and ACE2 prevented SARS-CoV–2 entrance and infection [Balkrishna, A., et al. 2020]. Ashwagandha has been shown in several research to have antiviral and immunomodulatory properties. Another research on withanone found that breaking electrostatic connections between the RBD and ACE2 prevented SARS-CoV–2 entrance and infection [Balkrishna, A., et al. 2020; Ahmed, S., et al. 2021].

Zingiber officinale Roscoe (Ginger)

Jafarzadeh A et al 2021 discussed in their review about the possibility of the ginger to be used as effective treatment for COVID-19. Ginger's antiviral, immunomodulatory, antioxidant and anti-inflammatory, characteristics can influence critical basic processes involved in COVID-19 development [Jafarzadeh, A., et al. 2021].

## CONCLUSION

As there are a large number of plant species being utilised as medicinal plants and there are a number of plants yet unexplored which directly depicts huge possibility to find new drug in coming years. The global market share of the herbal and traditional medicines is increasing according to WHO in 2003 the global annual market of herbal medicines was of US$60 billion which in 2012 for traditional Chinese medicine alone was US$83 billion [Allkin, B. 2017]. The role of medicinal plants is expanding from curing the disease to preventing the diseases which directly associates to the unlimited potential hidden in medicinal plants. The medicinal plants covered in this study might be utilised to create a possible lead chemical for covid-19. It is necessary to share this knowledge and the material associated which will ensure not only the proper documentation but also the transfer of the information to several generations [Inoue, M., et al 2019].

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