

Short Communication

Herbs Boosting Immunity in Covid-19: An Overview

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ABSTRACT

In the current situation, it is more crucial than ever to strengthen our defence system against it, as no evidence-based treatment for COVID-19 has been developed. Traditional spices and herbs have long been used in Indian cuisine as immunity enhancers. The findings of past studies on the immunomodulatory effects and antiviral activities of specific foods and herbs on influenza virus and coronavirus have been compiled in order to promote the use of herbal medicine as COVID-19 prevention therapy. Foods and herbs have a potential antiviral activity against SARSCoV-2 and can prevent COVID-19, according to a large number of reports. Herbs and spices have long been known for their therapeutic effects. Several spices are grown in India and are widely utilised in traditional medicine. Herbs such as Amla, Ashwagandha, Cinnamon, Giloy, Moringa, Neem, and Tulsi are thought to have a variety of health advantages. We don't have to "take" herbs and spices like we do medications. Instead, we add them to our favourite foods to give them a flavour boost and boost our immunity.

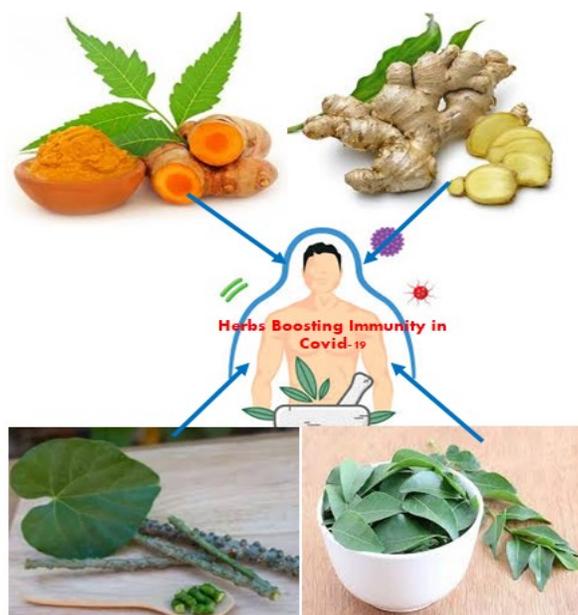
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GRAPHICAL ABSTRACT


Introduction

SARS-CoV-2, also known as Covid-19, originally appeared in Wuhan, Hubei Province, China. The outbreak was dubbed "unknown cause pneumonia." SAR-CoV-2 was declared a pandemic by the World Health Organization (WHO) on March 11, 2020. Since its discovery, it has impacted millions of people in a number of countries. Covid is assumed to be transferred by infected patients' respiratory droplets, which occur when they talk, cough, or sneeze. COVID-19 is currently without a conventional treatment. Treatments include antivirals, anti-inflammatory drugs, and antibiotics [1-3]. The death trend of Covid-19 patients revealed that early deaths were in older persons, most likely due to low immunity, which causes Covid-19 to proceed more quickly. As a result, it is critical to strengthen our immune system. It is critical to include some vitamins that will help to strengthen the immune system. Plants have long been employed in Ayurvedic treatment. They are generally non-toxic and have no negative effects. Antiviral and immunity-boosting effects have been discovered in several portions of medicinal plants. During this dangerous pandemic, it is

critical to stay healthy and establish a strong immune system, and the best way to do so is to use medicinal plants and herbs to do so naturally. Plant extracts can aid a lot to strengthen the body, according to Ayurveda, an alternative medicine system and traditional medical science. This article includes a list of some of the most essential medicinal plants that may aid in the immune system's fight against Covid-19 [4, 5].

Amla (*Phyllanthusemblica*)

The deciduous tree *Phyllanthusemblica* belongs to the Phyllanthaceae family of trees. Emblis, emblicmyrobalan, myrobalan, Indian gooseberry, Malacca tree, or amla are some of the common names for this plant. It contains a lot of ascorbic acid (vitamin C), which is essential for building immunity during the pandemic. Ellagitannins such as emblicanin A, emblicanin B, punigluconin, pedunculagin, punicafolin, phyllanemblinin A, and phyllanemblinin are other components of Amla. It also includes a lot of polyphenols including ellagic acid and gallic acid, as well as minerals, vitamins, amino acids, and fixed oils, all of which assist to prevent cancer cells from

growing. Also found are flavonoids such as rutin and quercetin. Amla is excellent for overall immunity because it revitalises and rejuvenates the bodily system. Because of its cooling properties, amla is frequently prescribed in pitta situations to assist remove excess body heat. It's also good for gastrointestinal problems. It contains anti-inflammatory qualities that aid in the relief of joint discomfort. Antidiarrheal and spasmodic, anti-diabetic, antibacterial, antiviral, ulcer protecting, wound healing, hepatoprotective, memory enhancer, hair growth promotion, antioxidant, and many more therapeutic applications of Amla are only a few of them [6-8].

Ashwagandha (*WithaniaSomnifera*)

Withania Somnifera is known by several names, including ashwagandha, indiangingesen, poison gooseberry, and winter cherry. It's a little shrub with light green flowers, simple leaves, and scarlet berries. The plant *Withaniasomnifera* belongs to the Solanaceae family. The primary constituents of Ashwagandha are withanolides, or triterpene lactones, withaferin A, alkaloids, steroidal lactones, tropine, and cuscohygrine[9]. Withanolides are responsible for its immunomodulating antibacterial and anti-tumor properties. Ashwagandha is classed as an adaptogen, which means it helps with stress relief. The immune system is suppressed by stress, leaving the body more susceptible to viral infections. It's one of the most effective immune boosters on the market. Ashwagandha boosts the immune system by boosting white blood cells (lymphocytes), which fight infections and viruses. It also reduces the risk of contracting the coronavirus. Ashwagandha increases the body's defences through boosting cell-mediated immunity. It contains anti-inflammatory and anti-diabetic properties as well. Blood sugar, cortisol, depressive symptoms, and inflammation are all reduced [10-13].

Cinnamon (*Cinnamon verum*)

Cinnamon is manufactured from the cinnamomum tree's inner bark. It is a member of the Lauraceae family. Cinnamon is made up of essential oils and compounds such as cinnamaldehyde, cinnamic acid, and cinnamate. The bark of numerous Cinnamon species is widely utilised in traditional and modern medicine, as well as in cookery. Cinnamon's essential oils and other compounds are antibacterial, antifungal, antioxidant, and anti-diabetic. Cinnamon acts as an immune booster by protecting the body from bacterial and viral infections. It also efficiently cures fungal infections of the respiratory tract. Cinnamon's anti-inflammatory, antioxidant, and antibacterial properties are all good to immunological health. It is also extremely recommended to build up immunity during this Covid -19 pandemic. Cinnamon also has anti-inflammatory and anti-infective properties, as well as the ability to mend injured tissue. It also has anticancer, antihypertensive, antilipemic, antidiabetic, and gastroprotective activities, according to studies [14-16].

Giloy (*TinosporaCordifolia*)

TinosporaCordifolia is a Menispermaceae herbaceous vine. Giloy, Guduchi, and heart-leaved moonseed are some of its common names. It has long been used in traditional medicine to treat a variety of ailments. *Tinospora* contains a wide range of phytochemicals, including alkaloids, phytosterols, glycosides, and a variety of other substances. According to studies, the main chemical constituent of Giloy, (alpha) -D-glucan, stimulates B cells and T cells, as well as natural killer cells, to produce several immune stimulatory cytokines at the same time, increasing immunomodulatory qualities [17, 18]. Vitamin C is abundant in Giloy leaves, making it a highly recommended supplement during Covid -19. Giloy might boost your immunity to fight covid if you take it on a regular basis. It also encourages early healing by boosting

macrophage activity. Giloykadha or pills eliminate toxins from the body, boosting immunity and curing skin conditions. It also has anti-cancer, hepatoprotective, anti-bacterial, anti-inflammatory, hypolipidemia, hypoglycemia, anti-obesity, anticarcinogenic, and antimutagenic effects [19-21].

Moringa (Moringaoleifera)

Moringaoleifera is a fast-growing, drought-resistant tree of the Moringaceae family. Moringa, drumstick tree, horse radish tree, ben oil tree, or benzolivetree are some of its common names. Flavonoids, alkaloids, phenols, vitamins, minerals, proteins, glycosides, glucosinolates and isothiocyanates, terpenes, saponins, tannins, and many other active ingredients are found in Moringa. Vitamin C, Vitamin A, and proteins are all significant nutrients found in Moringa. Moringa contains more Vitamin C than Orange, thus it should be your go-to plant during the Covid-19 pandemic. Vitamin C consumption is linked to the development of better immunity. It has antibacterial and anti-inflammatory properties. [22-24]. Potassium, iron, calcium, and amino acids are all abundant in moringa. It also contains a number of other essential nutrients that support the health of bodily cells, tissues, and muscles. The consumption of varied doses of Moringa results in a rise in white blood cell counts (which aids in the fight against foreign substances) and immunoglobulin levels. Moringaoleifera has been shown to have potent anti-cancer, anti-diabetic, anti-inflammatory, antibacterial, and cardiovascular capabilities, among other things [25].

Neem (Azadirachtaindica)

The tree neem (Azadirachtaindica) belongs to the Meliaceae family. It's sometimes called neem, nintree, or Indian lilac. Azadirachtin (the main active ingredient) is found in neem, as well as nimbolin, nimbin, nimbidin, nimbidol, sodium nimbirate, geduninsalannin, and quercetin. The therapeutic qualities of neem leaves, seeds, and

blossoms are well documented. It's also known as the Universal Healer (sarvaroganivarini), which means "one who heals all diseases and maladies." It is commonly used as an immune booster because it aids the body in fighting various forms of infections. Coronavirus may be inhibited by neem leaves extract powder or crude neem leaves content because it prevents it from multiplying. Neem cools your body from the inside out while also keeping your blood clean by clearing out impurities. This boosts immunity as well. Neem is an antiviral, antibacterial, and antifungal agent that works well. Malaria, high fever, viral flu, dengue fever, and other infectious disorders can all be prevented by taking Neem capsules on a regular basis. Anti-inflammatory, anti-diabetic, preventing and healing acne, treating dry skin, minimising hair loss, and encouraging hair growth are some of the other medicinal uses of neem[26-30].

Tulsi (Ocimum Sanctum)

Ocimum Sanctum is another miraculous herb used in traditional medicine. It belongs to the Lamiaceae family and is an aromatic perennial plant. Holy basil, or tulsi, is another name for it. Oleanolic acid, ursolic acid, rosmarinic acid, eugenol, carvacrol, linalool, and β -caryophyllene are phytochemical components of Tulsi (about 8 percent). Tulsi is a well-known herb in Covid 19 for its germicidal properties, which aid in the detection and destruction of germs, viruses, and bacteria. Cough, sore throat, colds, asthma, and other respiratory illnesses can all be cured with it. It removes extra cough from the lungs effectively. Hand sanitizers have been critical in this epidemic, and tulsi has been employed as a natural hand sanitizer due to its antibacterial properties. If we drink fresh Tulsi juice twice a day, our immunity will be boosted. Tulsi strengthens the body's critical functions. Tulsi is an effective immuno-modulator and regulator since it boosts immune response by raising NK cells and T-helper cells, as well as lymphocyte and neutrophil counts. Vitamin C, anti-oxidants,

antiviral, and antibacterial qualities are all present in this fruit. Bronchitis, bronchial asthma, malaria, diarrhoea, dysentery, skin illnesses, arthritis, severe eye diseases, chronic fever, insect bites, and other conditions are all treated with it. Antifertility, anticancer, antidiabetic, antifungal, antimicrobial, hepatoprotective, cardioprotective, antiemetic, antispasmodic, analgesic, adaptogenic, and diaphoretic effects are all found in Tulsi[31-34].

Conclusion

The COVID-19 Pandemic has affected the entire world's population. To preserve optimum health throughout this critical era, it is critical to boost the body's natural defensive mechanism. Since the outbreak, medicinal plants and their natural constituents have been shown to be the most promising choices for preventing or curing the infection and spread of this disease. In essence, these formulations are made up of a large number of phytochemicals that have a variety of roles in terms of preventing viral invasion, penetration, replication, expression, assembly, and release. The medicinal herbs aid in the development of the immune system and the fight against fatal viruses like COVID-19. As a result, herbal medicine could be used as a COVID-19 therapeutic option.

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