



A review: Role of natural immunity booster plants with alternative way to fight against Covid-19

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Abstract

Today world is facing an unprecedented pandemic COVID 19 caused by SARS COV 2. In present scenario it's become more important to build our defense system stronger against COVID-19. The best way is to strengthen our immunity naturally with the help of medicinal plants/herbs. This reviewed by evaluating information on the Internet (using Google Scholar, CAB Abstracts, Elsevier, JSTOR, Nature Publishing and Science online) and in libraries. The present review study covered to investigate the immunity-boosting medicinal plants in the support of maintaining health in the time of COVID 19. Herbs and spices were well known from ancient times for their medicinal properties. India is home to several spices that are used extensively in traditional medicine. Spices like turmeric, cinnamon, Garlic, Onion, Black pepper and ginger are known to have a health beneficial property. Herbs like Giloy, Ashwagandha, Tulsi, Neem, Drumstick tree, Amla, Liquorice are said to have several health benefits. Herbs and spices are wonderful because, unlike drugs, we don't need to "take" them. Instead, we can add them to our favorite dishes for a kick of flavor and increased immunity. The natural '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.

Keywords: review, COVID-19, medicinal plant, ayurvedic kadha

Introduction

Today worldwide, a novel corona virus disease (COVID-19) caused by Severe Acute Respiratory Syndrome Corona virus 2 (SARS-CoV-2) 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]. Due to its Pandemic nature, it spread around the world very rapidly and affected approx. 11.8 million individuals worldwide and has resulted in more than 5.45 lakh death (till 9th July 2020). In India approx. 7.95 lakh Confirmed case and 21,638 death of COVID -19 were reported till 10th July 2020. Spreading of Corona virus in person to person by several ways *viz.* droplets, aerosolized transmission, surface transmission, fecal-oral. Covid-19 can affect multiple organs in the body. The organ that gets affected after lungs is the heart. The disruption extends to the blood which causes blood clots. When this break, it can restrict blood supply to the brain. In Covid-19 affected individual, the immune system mounts an all-out battle against the virus SARS-CoV-2 which in turn disrupts oxygen (O₂) Transfer and makes breathing difficult, accompanied with cough. The diagnosis of Covid-19 is usually based on detection of SARS-CoV-2 by PCR testing (most commonly Collecting specimens from the surface of the respiratory mucosa with nasopharyngeal swabs). The number of confirmed cases and deceased cases increases more rapidly day by day. Since there are no

effective treatments of COVID-19 available as well as many aspects of the virus and disease are still unclear till date but 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, 3]. 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 [4].

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 [5]. 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. Plant's 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 their antiviral activities and immunity strengthening capacity [6].

The term immunity defines body's natural defense system against a vast array of diseases and disorders. Remarkably sophisticated and advanced among vertebrates, the complex immune system is capable to generate a limitless variety of cells and molecules to arrest enormous spectrum of infections and undesirable substances. Immunomodulators refer to those substances capable of inducing, amplifying, and inhibiting any component or phase of the immune system. Immuno stimulators and immunosuppressant are two types of immunomodulators are known for use. In fact,

immuno pharmacology is a newer branch of pharmacology concerned with immunomodulators [7]. Administration of immunity booster such as number of medicinal plants, as in the case of COVID-19. and use of immuno suppressor in cases of an exaggerated response of an immune system is appreciating to reconstitute the normal immune system and increase the longevity of life. Immunomodulator intake along with antigen, the process is meant to boost the immune system, and the modulator is known as immune adjuvant [8].

According to ancient Indian texts, “aushadham ucchyathe sarvam”, which implies that food is the absolute cure and healer. Ayurveda, which is a traditional Indian system of medicine and promotes several herbs, spices, roots and leaves that help boost the immune system naturally. Through a number of researches conducted in the area have explored that many of the chemicals in the present of some medicinal plants form alkaloids, flavonoids, terpenoids, polysaccharides, lactones, and glycoside products are responsible to cause alterations in the immunomodulatory properties [9]. A strong immune system helps the body fight flu, disease-causing viruses, as well as bacteria. Some medicinal plants present in immunomodulators, is gaining much interest. Generation of herbal medicine as multiple-component agent expected to modulate the complex immune process in such a way so as to prevent the infection rather than treatment and cure of the disease such as COVID-19. Some of the important medicinal plants are as follows that potentially can help in boosting immunity against COVID 19.

Immunity Booster Herbal Plants

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. Consume Giloy during this pandemic to reduce the risk of contracting the coronavirus infection. Through a number of researches conducted in the area have explored that many of the chemicals in the present of Giloy plant alkaloids, phytosterols, glycosides other chemical compounds Columbin, tinosporaside, jatrorrhizine, palmatine, berberine, tembeterine, tinocordifolioside, phenylpropene, disaccharides, choline, tinosporic acid, tinosporal, tinosporon, tinosporide and Vitamins also present have been isolated from *Tinospora cordifolia*. 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 used for various skin problems as it helps to remove toxins from the body. It also shows pharmacological properties like immunomodulation, hypolipidemic, hypoglycemic, hepatoprotective, antibacterial, anti-inflammatory, antiobesity, anticarcinogenic and antimutagenic properties of Giloy [10].



Fig 1: Giloy leaves

Ashwagandha (*Withania Somnifera*)

It is a small shrub with pale green flowers, simple leaves, and red berries. Consume *ashwagandha* during this pandemic to reduce the risk of contracting the coronavirus infection. 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 main phytochemical constituents are withanolides which are triterpene lactones withaferin A alkaloids, steroidal, lactones, tropine, and cusco hygrine and Vitamins also present. The root of ashwagandha is regarded as tonic, aphrodisiac, narcotic, diuretic, anthelmintic, astringent, thermogenic and stimulant [11] Studies show that withanolides, [12] the major constituent of ashwagandha is responsible for its antimicrobial, antitumor, and immunomodulating properties. [13] 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 [14].



Fig 2: Ashwagandha plant

Tulsi (Ocimum Sanctum)

In the traditional system of medicine, different parts of *Ocimum sanctum* have been recommended for the treatment of different diseases. This plants present in number of phytochemical constituents of tulsi are oleanolic acid, ursolic acid, rosmarinic acid, eugenol, carvacrol, linalool, and β caryophyllene (about 8%) and vitamin C. Tulsi essential oil consists mostly of eugenol (~70%) β -elemene (~11.0%), β -caryophyllene (~8%), and germacrene (~2%), with the balance being made up of various trace compounds, mostly terpenes. Consume tulsi during this pandemic to reduce the risk of contracting the coronavirus infection. *Tulsi* is another wonder herb that is much favoured by Ayurveda. This aromatic leaf can be your primary line of defense against COVID-19. *Tulsi* or basil is a powerful germicide. 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. Simply chew a few leaves first thing in the morning. You can also add a few drops of water boiled with *tulsi* leaves into your food. ^[15].



Fig 3: Tulsi leaves

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. Consume Neem during this pandemic to reduce the risk of contracting the coronavirus infection. Neem also has blood-purifying properties; boosting both the lymphocytic and cell-mediated immune systems. Neem fruit, seeds, leaves, stems, and bark contain diverse phytochemicals. In addition to azadirachta, azadirachtin and related limonoids, the seed oil contains glycerides, diverse polyphenols, nimbolide, triterpenes, and beta-sitosterol. The yellow, bitter oil has a garlic-like odor and contains about 2% of limonoid compounds. The leaves contain quercetin, catechins, carotenes, and vitamin C. 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 ^[16].



Fig 4: Neem leaves

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. Consume Drumstick during this pandemic to reduce the risk of contracting the coronavirus infection. The leaves are the most nutritious part of the plant, being a significant source of B vitamins, vitamin C, provitamin A as beta-carotene, vitamin K, manganese, and protein. 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 ^[17].



Fig 5: Drumstick tree

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. Consume Turmeric during this pandemic to reduce the risk of contracting the coronavirus infection. Phytochemical components of turmeric include is about 60–70% carbohydrates, 6–13% water, 6–8% protein, 5–10% fat, 3–7% dietary minerals, 3–7% essential oils, 2–7% dietary fiber, and 1–6% curcuminoids, diarylheptanoids, curcumin, demethoxy curcumin, bisdemethoxy curcumin, turmerone, germacrone, atlantone and zingiberene Vitamins also present. 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, antifungal, antiviral, antioxidant, anti-inflammatory, and antibacterial activities [18]. Curcumin also shows pivotal role in the modulation of immune system. The prebiotic-like properties of turmeric have been explored which enable it to make changes in the gut microbiota and support the gut-immune connection. Curcumin is capable of lowering cortisol levels which in turn help maintaining balance in immune system [19].



Fig 6: Turmeric Powder

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. Consume Garlic during this pandemic to reduce the risk of contracting the coronavirus infection. Phytochemical components of garlic include allicin, ajoene, diallyl polysulfides, vinylthiols, and S-allylcysteine as well as enzymes, saponins, flavonoids, and Vitamins also present. *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 magical immunity booster is the presence of Allicin. These

compounds have been shown to boost the disease-fighting response of white blood cells in the body when they encounter viruses, such as the viruses that cause the common cold or flu [20]. 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 [21].



Fig 7: Garlic

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. 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. Consume Amla during this pandemic to reduce the risk of contracting the coronavirus infection. It also contains numerous phytoconstituents viz. a higher number of polyphenols like gallic acid, ellagic acid, kaempferol, different tannins, minerals, vitamins, amino acids, fixed oils, and flavonoids like rutin and quercetin vitamin C (Ascorbic acid), ellagitannins, such as emblicanin A (37%), emblicanin B (33%), punigluconin (12%), and pedunculagin (14%), punicafolin, phyllanemblin A, phyllanemblin also present [22].



Fig 8: Amla fruits

Cinnamon (*Cinnamomum verum*)

Cinnamon has also been used for its medicinal properties for thousands of years. Consume Cinnamon during this pandemic to reduce the risk of contracting the coronavirus infection. Phytochemical components of Cinnamon include manganese, calcium, fiber, and iron, some essential oil (up to 2.8%), with cinnamaldehyde (60-90%) as a major component, trans-cinnamaldehyde (77.1%), trans- β -caryophyllene (6.0%), γ -terpineol (4.4%), as well as eugenol (3.0%) also present. 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 [23].



Fig 9: Cinnamon plant

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. Consume Onion during this pandemic to reduce the risk of contracting the coronavirus infection. Onion contains sulfur, zinc, selenium, carbohydrates, Sugars, Fat, Protein, Vitamins, Thiamine (B1), Riboflavin (B2), Niacin (B3), Pantothenic acid (B5), Vitamin B6, Folate (B9), Vitamin C, Calcium, iron, Magnesium, phosphate, 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 [24].



Fig 10: Onion fruits

Black pepper (*Piper nigrum*)

Piper nigrum has been extensively explored for its biological properties and its bio-active, Consume Black pepper during this pandemic to reduce the risk of contracting the coronavirus infection. Phytochemical components of Piper nigrum include amides, piperidines, pyrrolidines, safrole, carcinogenic, selenium, vitamin B₁₂, Vitamin C, beta-carotene, curcumin, vitamin K, iron, manganese, essential nutrients, protein, dietary fibre. 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 [25].



Fig 11: Black pepper

Ginger (*Zingiber officinale*)

Ginger is widely used spice around the world. In Chinese, Ayurvedic and Tibb-Unani herbal medicines it has been used for the treatment of catarrh, rheumatism, nervous diseases, gingivitis, toothache, asthma, stroke, constipation and diabetes. Consume Ginger during this pandemic to reduce the risk of contracting the coronavirus infection. The Phytochemical components of ginger include Carbohydrates, Sugars, Fat, Protein, Vitamins, Thiamine (B1), Riboflavin (B2), Niacin (B3), Pantothenic acid (B5), Vitamin B6, Folate (B9), Vitamin C, Vitamin E, Calcium, iron, Magnesium, phosphate, Sodium, zinc also present. The medicinal, chemical, and pharmacological properties of ginger have been extensively reviewed the evidence for the effectiveness of ginger as an antioxidant, anti-inflammatory agent, antinausea compound, and anticancer agent as well as the protective effect of ginger against other disease conditions are reviewed. Presence of ketones, especially the gingerols, which appear to be the primary component of ginger, is responsible for its spicy aroma [26]. The gingerols, paradols, sesquiterpenes, shogaols, and zingerone, are responsible for powerful anti-inflammatory and antioxidant properties [27, 28]. Studies on various models showed that the ginger extract reduces inflammation in those with conditions like rheumatoid arthritis, inflammatory gut disease, asthma, and certain cancers. A clinical trial on human using ginger powder significantly reduced levels of inflammatory proteins like tumor necrosis factor alpha (TNF-alpha) and

C-reactive protein (CRP). Ginger was improving the body's defense against disease by improving the cell-mediated immunity [29].



Fig 12: Ginger

Mulethi (*Glycyrrhiza glabra*)

Liquorice or yashtimadhu, also known commonly as mulethi is an excellent home remedy for a number of disorders like cough and cold. According to Ayurveda, mulethi is sweet to taste, it's slimy and heavy, and is efficacious in treating vata disorders. Glycyrrhizin – a saponin found in mulethi is known for its anti-microbial action. The root is powdered and had with honey and ghee to improve immunity. It is believed to be a natural revitalizer and anti-ageing agent. Some studies have also shown positive effect of mulethi in relation to brain function [30].



Fig 13: Liquorice root

Immunity and Corona

Immunity is our bodies' ability to provide resistance or protection against diseases and infections caused by pathogens such as viruses, bacteria, parasites, and other harmful microorganisms. So, naturally, immunity boosters are foods, fruits, vegetables, or even artificially designed supplements that help us increase this ability to fight against illnesses. All the parts of our body that help us fight against diseases and help improve our immunity are collectively named as the immune system. Our immune system has the

ability to detect harmful bacteria and viruses that enter our body – these cells, also known as antigens, attack them by producing 'antibodies.' Seniors must maintain and strengthen their immunity to protect themselves from the risk of infections and diseases. Be it relatively less dangerous diseases like the flu or common cold, or something more serious like diabetes or cancer, having a strong immune system can help you defend your body against them. With the onset and the rapid spread of the global pandemic, Corona, or COVID-19, the ones that are most likely to be affected are seniors.

This virus is more deadly for people with lower immunity and chronic health conditions. In such a case, older adults must pay more attention to improving their immunity. A better immune system would imply better chances of preventing or warding off the virus, and higher chances of recovery even if the disease has been contracted. Immunity boosters can help beneficial for seniors protect the body from various diseases and infections. They are made, keeping in mind your body's requirements. Consuming immunity boosters can replenish a lot of essential nutrients, like vitamins, minerals, etc. in the body and they help speed up your body's healing process and also they also assist in maintaining body weight, blood pressure, digestion, body growth, healthy cholesterol, and many other aspects for body.

There are a lot of foods, fruits, and vegetables that can naturally enhance your immune system. One of the easiest ways to improve your immunity is to have a healthy and wholesome diet. Fruits and vegetables that are rich in beta carotene, Vitamin C, Vitamin E, and zinc are good for boosting immunity. These include broccoli, cauliflower, kale, kiwi, orange juice, papaya, red, green or yellow pepper, sweet potato, strawberries, tomatoes, avocados, peanuts, almonds, spinach, eggs, dairy, milk, and more all kinds of berries, along with foods rich in omega-3 fatty acids such as beans, flax seeds, and even some nuts can be consumed to strengthen immunity some of the immunity-boosting herbs are garlic, black cumin, and licorice add these to your morning diet for a healthier and happy immune system [30].

Herbal Plants Remedy for Kadha

Nature has blessed up with numerous ingredients that support our immunity system strengthening. Immunity refers to the capability of the body for fighting against diseases. Kadha is a drink made up of multiple spices and herbs that extracts its natural flavor in boiling water. If you are immune system is strong enough then you can protect you and your family from Coronavirus and can also win the fight against Coronavirus. Kadha for corona is the best home remedy to boost up your immune system. Kadha is an Ayurvedic remedy that keeps one fit from cold, fever, flu, Coronavirus and makes our immune system strong. Ayurvedic Kadha provides multiple medicinal benefits with the goodness of natural ingredients. Kadha is a natural healing agent that benefits our body with the essence of ingredients provided by nature herbs and spices. Even the guidelines declared by "Ayush" encourages people for immunity boosting by providing Ayurveda immunity boosting measures to fight against covid-19 crisis [31].



Fig 14: Ayurvedic Kadha

Immunity Booster Kadha Recipe

- 4-5 Leaves Giloy
- 4-5 Leaves Ashwagandha
- 4-5 Leaves Tulsi
- 4-5 Leaves Neem
- 4-5 Leaves Drumstick
- 1/2 Teaspoon Turmeric Powder
- 1/2 Teaspoon Grated Garlic
- 4-5 Leaves Amla
- 1/2 Teaspoon Cinnamon Powder (Dalchini Powder)
- 1/2 Teaspoon Grated Onion
- 2-3 Teaspoon Black Pepper Powder
- 1 Teaspoon Dried Ginger Powder
- 1/2 Teaspoon Turmeric Powder
- 1 Teaspoon Honey
- 2 Cup Water

Procedure for Ayurvedic Kadha

- Take a saucepan and add all the ingredients given above except honey
- Stir the ingredients until a boil comes up. Water will become 1 and ½ from 2 cups
- Now cover the Kadha for 2 minutes with the lid
- After this strain the Ayurvedic Kadha in a mug and add one teaspoon honey in it.
- Your Ayurvedic Kadha for immunity boosting is ready to consume.
- Drinking it twice a day is recommended for better results ^[31].

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 natural spices like turmeric, cinnamon, Garlic, Onion, Black pepper and ginger are known to have a health beneficial property. Herbs like Giloy, Ashwagandha, Tulsi, Neem, Drumstick tree, Amla and Liquorice are said to play a supplementary role in developing the immune system and fighting deadly viruses including COVID-19. In medicinal plants present in phytochemicals in the form of alkaloids, flavonoids, terpenoids, polysaccharides, lactones, glycoside, Carbohydrates, Sugars, Fat, Protein, Vitamins, Thiamine (B1), Riboflavin (B2), Niacin (B3), Pantothenic acid (B5), Vitamin B6, Folate (B9), Vitamin C, Vitamin E, Calcium, iron, Magnesium, phosphate, Sodium and zinc products are

responsible to cause alterations in the immunomodulatory properties. This review comprehensive scientific studies required to make medicinal plants remedy for Ayurvedic kadha some ingredient, procedure and direction of Ayurvedic kadha administration to fight against viral diseases like COVID-19. The Ayurvedic kadha enhancing the body's natural defense system (immunity) plays an important role in maintaining optimum health. We all know that prevention is better than cure. While there is no medicine for COVID-19 as of now, it will be good to take preventive measures which boost our immunity in these times.

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