**IMMUNITY BOOSTER: ROLE OF MEDICINAL PLANTS AND HERBS**

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**Abstract**

The whole world was facing COVID-19 epidemic, and everyone was showing lot of interest to invest and study ways to boost our vulnerable immune system, and make an attempt to help human beings for getting first line of defence against the deadly bug. Since ancient times, medicinal herbs, pulps and spices were well known for their medicinal parcels. thus, the medicinal herbs and pottages plays a critical part to boosting our impunity during the COVID- 19 epidemic. it's also veritably important to consume supplements in the form of vulnerable nutrients similar as vitamin A, C, E, D, Bcomplex, Zinc and Cu that will support your body to fight against the pathogens. This paper presents an analysis of popular vulnerable immune boosting medicinal herbs and sauces.

**Keywords:** Medicinal herbs, COVID- 19, Coronavirus, immunity, SARS- CoV- 2.

**Introduction**

Covid- 19 attacks people with low vulnerable immune systems and especially people below 12 years and above 75 years of age. The system is built on helpful live bacteria that lives in the gut which guards the mortal body from bacteria and new evolving viruses. When the weak immune system response is low, weak, or damaged, it becomes an open assignation for infections similar as coronavirus or other conditions like diabetes, heart complaint, or cancer. In this review we hrough insight on botanical plants with medicinal value which will serve as a about colorful medicinally important shops and sauces which can serve as boon against COVID- 19. The examples of plants which will be helpful against covid 18 are Garlic (Allium sativum), Margosa neem (Azadirachta indica), Tulsi (Ocimum sanctum), Giloy (Tinospora Cordifolia), clove (Syzygium aromaticum), ginseng( PanaxquinquefoliusL.), Betel vine( Piper betel), Black paper (Piper nigrum), Black cumin (Black cuminL.), Ashwagandha (Withania somnifera), Licorice astragalus(Astragalus glycyphyllos), turmeric (Curcuma domestica), elderberry( Sambucus nigra), Giloy (Tinospora Cordifolia) etc. These crops are known to be rich in antioxidants, vitamins, proteins, carbohydrates, salutary filaments, amino acids, minerals, steroids, alkaloids, antiviral, antibacterial phytochemicals which will help in invigorating the vulnerable system and also helps in killing the raided infectious organisms. Many pulps helpful in forestallment and treatment of COVID are Elderberry (Sambucuss nigra), Garlic (Allium sativum), gusto (Zingiber officinalis), Giloy (Tinospora cordifolia), Tulsi (Ocimum sanctum), Betalvive (Piper betal), Margosa (Azadirachtin indica), Turmeric (Curuma domestica), Clove (Syzgiuma romaticum), Black paper (Piper nigrum), Ginseng (Planax quinquefolius), Black cumin ( Black cuminL.), Zicorice astragalus, Astragalus glycyphyllos, Aswagandha (Withania somnifera and Withania coagulance), Cinchona (Cinchona officinalis).

**Immunity**

Immunity or resistance is the state of being unsusceptible or resilient to a harmful agent or process, particularly a pathogen or communicable ailment. Protection may occur logically or be shaped by past acquaintance or immunization. The immune structure of body defends our body from bugs and infections (occupying infective microbes) and cancer. It's the arrangement that produces the immune answer to defend your body from external matters, cells, and tissues. The immune system contains countless portions of the body plus the thymus, spleen, lymph nodes, superior deposits of lymphoid tissue (such as those in the gastrointestinal tract and bone marrow), macrophages, lymph cell including the B cells and T cells, and antibodies. Immunity, the state of protection from communicable disease has both a less precise or innate and a more precise or adaptive section. Therefore, innate and adaptive immunity are mainly two components of immune system. The innate immunity is exist in all metazoans, while the adaptive immunity only happens in craniates.

**Innate Immunity**

Innate immunity exist in entire metazoans and immune responses ([provocative responses](https://en.wikipedia.org/wiki/Inflammation) and [phagocytosis](https://en.wikipedia.org/wiki/Phagocytosis)). This offers the first mark of defence against infectious attacks. It is a quick reply (in minutes); it is not definite to a specific pathogen. It has no remembrance and does not converse lifelong immunity to the host. It has 4 key gears and is found in all curricula of plant and animal life. The innate or inborn immune system is made of defence against infectious diseases that can be triggered proximately after a pathogen attack occurs. To keep body frame free from infection, The innate immune structure is essentially made up of barricades that aim to keep viruses, bacteria, parasites, and other pathogenic foreign elements out or restrict their skill to supper and move throughout the body. The innate immune system includes:

**Physical Barriers**

Such as skin, the gastrointestinal tract, the respiratory tract, the nasopharynx, cilia, eyelashes and other body hair.

**Defense Mechanisms**

Such as secretions, mucous, bile, gastric acid, saliva, tears, and sweat. Wide-ranging Immune Responses such as inflammation, irritation, cough reflex and non-specific cellular replies. The inflammatory response vigorously brings immune cells to the place of an infection by collective blood flow to the zone. Accompaniment is an immune reply that scripts pathogens for demolition and makes holes in the cell membrane of the pathogen.

**Adaptive Immunity**

The adaptive section, on the other hand, includes more progressive lymphatic cells that can differentiate among specific "non-self" constituents in the existence of "self". Inflammation is response to external substances and is etymologically labelled, while immune protection is labelled as the non-reaction to self-substances. This delivers a precise immune response to engage an invasive pathogen. Following introduction to a external organism there is an initial effecter reply that removes or deactivates a pathogen. Later re-acquaintance to the same foreign organism persuades a remembrance response with a faster immune reaction that removes the pathogen and averts illness. This action originates only in vertebrates. Adaptive immunity happens after introduction to an antigen either from a pathogen or after immunization. This portion of the immune arrangement is stimulated when the innate immune response is inadequate to regulate an infection. The adaptive response cannot be organized without information from the innate immune system. There are two types of adaptive responses: the cell-mediated immune response (Controlled by T cells) and the humoral immune response, which is measured by activated B cells and antibodies. Stimulated T cells and B cells that are precise to molecular assemblies on the pathogen thrive and attack the invading pathogen. Their attack can kill pathogens unswervingly or secrete antibodies that increase the phagocytosis of pathogens and disrupt the infection. Adaptive immunity also contains a retention to offer the host with lasting defense from reinfection with the same type of invading organism; on re-exposure, this remembrance will enable an effective and rapid response.Natural immunity: Natural immunity occurs subsequently when you get infested by a bacteria or virus and your immune arrangement answers by generating antibodies against it. The infection might make you bizarre. But if you are exposed to that bacteria or virus in the coming time, body's barricades spot it and bout back with antibodies. This makes infection less likely to happen again. Generated antibodies due to a normal infection, includes antibodies provided by mom through their foremilk, the early breastmilk which protects baby for short time, but this is time when infant is most susceptible infection.

**Artificial immunity**

Intentional exposure to small quantities of infection helps body to develop artificial immunity by which the body is given immunity to a various disease. Antibodies generated by receiving antigen in a vaccine/serum rather than a normal infection generally does not last as long compared to when generate antibodies from a natural infection.

**Active immunity**

Active Immunity outcomes when introduction to a virus or bacterial organism that triggers the immune system to produce antibodies in response to illness. Active immunity can be developed through natural or vaccinated immunity, Immunity resulting from antibodies generated by own body or generated in response to normal infection or in response to vaccine antigens.

Passive immunity: When a person is given antibodies, it provides passive immunity to a disease rather than creating them through his or her own immune scheme. A newborn baby gains passive immunity from its mother through the placenta. Immunity resulting from antibodies from another body, such as given through mom's milk or non-natural means (antivenom antibodies). As antibodies are not supplied by the body, generally such immunity does not last as long as active immunity does.

Since ancient times pharmacopoeial or non-pharmacopoeial or synthetic drug development extensively uses medicinal plants which are rich in active constituents. The main benefit of herbal medicine is. It is easier to obtain compared to prescribed medicines. It stabilizes hormones and metabolism of body and in due course provides natural healing and strength to immune system. According to the World Health Organization, around 80% of the world’s inhabitants uses herbal medicines for primary health care and are benefitted immensely, particularly across Europe and South Asia. Research shows that many of these plants not only have anti-inflammatory belongings, they also help build up the body’s normal and natural immunity and unlike allopathic medicines most of these herbs and spices are relatively safe unlike antibiotics, which can have grave side effects which sometimes become life threatening.

**Medicinal Plants and Herbs**

**Sambucus nigra (Elderberry)**

Sambucus nigra is a [species](https://en.wikipedia.org/wiki/Species_complex)  of [flowering plants](https://en.wikipedia.org/wiki/Flowering_plant) in the [family](https://en.wikipedia.org/wiki/Family_(biology)) [Adoxaceae](https://en.wikipedia.org/wiki/Adoxaceae). It is commonly known as elder, black elder, elderberry, European elder, European elderberry, and European black elderberry. It cultivates in primarily in sunny locations. It blossoms in variety of conditions including both wet and dry fertile soil. The plant is widely regarded as [showy](https://en.wikipedia.org/wiki/Ornamental_plant) shrub or small tree. Flowers and the berries both the have a long tradition of gastronomic use, primarily for cordial and wine preparation. It is widely present in Europe and Western Asia which is regarded as home for Elderberry, its scientific name is Sambucus nigra which is an intense purple berry. From many years it is being used for its enormous health benefits. Chemically it contains polyphenolic compound (such as Anthocyanins, Flavonols, Phenolic acid), carbohydrate (mainly glucose and fructose), citric acid, terpenes, malic acid and lectins and additional vital nutrients. In invitro study Liquid elderberry extract showed antiviral action against influenza and respiratory bacterial pathogens. In preclinical animal study, there is sign that elderberry (Sambucus nigra L. (Adoxaceae)) prevents the replication and viral add-on of the human coronavirus NL63 (HCoV-NL63). At an early-stage Elderberry is the most effective means of preventing or combating coronavirus infections. One cup of elderberries contains 106 calories. Nutrient values of elderberry per 100 grams are as ~870 mg Vitamin A, 1.86 mg Iron, 391.33 mg Potassium, 34.10 mg Vitamin C, 28.06 mg Calcium, 217 mg Sodium and small amount of other minerals, folic acid, amino acids, dietary fibers are also present. The healthy cells are protected from attack of harmful free radicals by elderberry as it is enriched with flavonoids having antioxidant and anti-inflammatory properties thus have implications in skin care, boosting immune system which will helps body to fight against flu, cold and other respiratory infections.

**Allium sativum (Garlic, Lahsun)**

Allium sativum is a [species](https://en.wikipedia.org/wiki/Species) of [bulging](https://en.wikipedia.org/wiki/Bulb) flowering plant in the [genus](https://en.wikipedia.org/wiki/Genus) [Allium](https://en.wikipedia.org/wiki/Allium). [Onion](https://en.wikipedia.org/wiki/Onion), [shallot](https://en.wikipedia.org/wiki/Shallot), [leek](https://en.wikipedia.org/wiki/Leek), [chive](https://en.wikipedia.org/wiki/Chive), [Welsh onion](https://en.wikipedia.org/wiki/Allium_fistulosum), and [Chinese onion](https://en.wikipedia.org/wiki/Allium_chinense) are close relatives of garlic. It has a history of several thousand years of human consumption and use. It is inherent to [South Asia](https://en.wikipedia.org/wiki/South_Asia), [Central Asia](https://en.wikipedia.org/wiki/Central_Asia) and northeastern [Iran](https://en.wikipedia.org/wiki/Iran) and has long been used as a seasoning worldwide. [Ancient Egyptians](https://en.wikipedia.org/wiki/Ancient_Egypt)  is known to  use it as both for food flavoring and a [traditional medicine](https://en.wikipedia.org/wiki/Traditional_medicine). It helps in reducing stress and high blood pressure. Garlic has potent anti-oxidant properties and approx. 76% of the world's supply of garlic is cultivated in China, it prevents beriberi and also helps to enhance thiamine (vitamin B1) absorption in the body. In colds, flu or COVID-19, its antiviral property is helpful in reducing the severity of infection. Hence, Garlic increases the sensitivity of immune system and helps to counter to viruses and other diseases. Allicin is board spectrum antibiotic present in garlic. It stimulas protective white blood cells like NK cells and macrophages which helps to enhance immune health. In one of the in vitro study, Allium sativum L. (Amaryllidaceae) extract was found to inhibit the synthesis of viral nucleoproteins and polymerase activity thus inturn inhibited influenza A (H1N1) virus. The paper suggests a decoction of Allium cepa L. (Amaryllidaceae) for colds. For good results, it is suggested to chop or crush garlic before consuming it, as it works well when in connection with oxygen. Across the world, Garlic is used to enhance taste to almost every form of cuisine.

**Zingiber officinalis (Ginger)**

Ginger is a [flowering plant](https://en.wikipedia.org/wiki/Flowering_plant). [Rhizome](https://en.wikipedia.org/wiki/Rhizome) of ginger, ginger root or ginger, is extensively used as a [spice](https://en.wikipedia.org/wiki/Spice) and a [traditional medicine](https://en.wikipedia.org/wiki/Folk_medicine). It is a [herbaceous](https://en.wikipedia.org/wiki/Herbaceous) [perpetual](https://en.wikipedia.org/wiki/Perennial_plant) bearing narrow leaf blades and grows on annual false stems (pseudo stems made of the trundled bases of leaves) about one meter tall. It is very significant medicinal plant belonging to the family Zingiberaceae. Anti-inflammatory, antifungal, and anti-cancer properties of Ginger are well established properties documented in traditional medicine textbooks. Ginger traditionally has been widely used for its therapeutic properties in curing colds and asthma, coughs, nausea, morning sickness, travel sickness, arthritis, gastrointestinal complaints and even depression. Ginger tea is prepared by crushing ginger and boiling it with tea leaves and water. Since ancient times for digestive ailments powdered ginger mixed with pulverized cloves, cardamom and caraway is been used. Ginger is helpful in fighting respiratory problems (relieve congestion associated with the common cold), strength immunity (due to high level of anti-oxidant), Relieve stress (due to blend of the strong aroma and remedial property), improve blood circulation (due to presence of vitamin, minerals and amino acids in ginger it can help restore and improve blood circulation and prevent fat from deposition in arteries helping to prevent heart from Cardiac Vascular Disorder.

**Tinospora cordifolia (Giloy, Guduchi)**

Commonly known as gurjo, heart-leaved moonseed, guduchi or giloy) is a [herb](https://en.wikipedia.org/wiki/Herbaceous)  indigenous to tropical regions of the [Indian subcontinent](https://en.wikipedia.org/wiki/Indian_subcontinent) belonging to family [Menispermaceae](https://en.wikipedia.org/wiki/Menispermaceae" \o "Menispermaceae). It is being mentioned in [Ayurveda](https://en.wikipedia.org/wiki/Ayurveda) to treat numerous disorders. Scientifically giloy is named as Tinospora cordifolia and is used from centuries for its medicinal values. Many in vitro and invivo studies of giloy have stated the hypolipidemic, hepatoprotective, antibacterial, hypoglycemic, anti-inflammatory, antiosteoporotic, antiobesity, anticarcinogenic and antimutagenic properties. Guduchi or Giloy herb is advocated to comprise various diterpene components and polysaccharides as well as arabinogalactan polysaccharidewhich are immunomodulating and adaptogenic in nature. Various studies revealed that Giloy herbal extract could cause imperative enhancement in IgG antibodies in the serum and stimulation of macrophages, induction of cell regulated immunity and humoral immunity.

**Ocimum sanctum (Holy Basil, Tulsi)**

Tulsi is aromatic [perennial](https://en.wikipedia.org/wiki/Perennial) plant, normally known as holy basil, tulsi or tulasi, and tamole, damole and it belongs to family [Lamiaceae](https://en.wikipedia.org/wiki/Lamiaceae" \o "Lamiaceae). Tropical and subtropical regions of [Australia](https://en.wikipedia.org/wiki/Australia), [Malesia](https://en.wikipedia.org/wiki/Malesia), [Asia](https://en.wikipedia.org/wiki/Asia), and the western Pacific are regarded as home for tulsi. It is widely farmed throughout the [Southeast Asian](https://en.wikipedia.org/wiki/Southeast_Asia) [tropical region](https://en.wikipedia.org/wiki/Tropics) as an agricultural and [environmental weed](https://en.wikipedia.org/wiki/Invasive_species). In many tropical regions of the Americas, plant has escaped from cultivation and has been [acclimatized](https://en.wikipedia.org/wiki/Naturalisation_(biology)) . many clinical and preclinical in-vitro and in-vivo studies has documented its therapeutic potential as antioxidant, anti-aging, anticancer, antiviral, antimicrobial properties, antipyretic activity, anti-arthritic activity, treatment of gum ulcers, kidney problems, earache, menstrual irregularities, arthritis, anorexia and malaria and used as a haemostypticin childbirth etc. Interestingly, the role of tulsi for scientific evidence against COVID-19 has also been elucidated.

**Curcuma domestica (Turmeric, Haldi)**

Turmeric or Curcuma longa  is a [flowering plant](https://en.wikipedia.org/wiki/Flowering_plant). It bongs to [ginger](https://en.wikipedia.org/wiki/Ginger) family [Zingiberaceae](https://en.wikipedia.org/wiki/Zingiberaceae" \o "Zingiberaceae). It is found abundantly in the [Indian subcontinent](https://en.wikipedia.org/wiki/Indian_subcontinent) and [Southeast Asia](https://en.wikipedia.org/wiki/Southeast_Asia). From thousands of years, the “Indian saffron” is a yellow orange spice and medicinal herb that has been as an anti-inflammatory agent. It is frequently used in India for curries and other dishes. It’s decoction (kadha) made from chopped ginger, tulsi and turmeric, once daily is recommended by AYUSH to improve immunity. It is one of the most well researched flavor, extensively used for its therapeutic properties. The main phytochemical includes diarylheptanoids such as curcumin which is very supportive in enhancing the immunity system. Previous conclusion has proven its therapeutic potential as antifungal, antiviral, antioxidant, anti-inflammatory, cardiovascular and anti-diabetic effects, gastrointestinal effects, anticancer effect, antimicrobial activity, hepatoprotective and renoprotective effects.

**Syzygium aromaticum (Clove, Laung)**

Cloves are the aromatic [flower](https://en.wikipedia.org/wiki/Flower) [buds](https://en.wikipedia.org/wiki/Bud) belonging to family [Myrtaceae](https://en.wikipedia.org/wiki/Myrtaceae" \o "Myrtaceae). They are native to [Indonesia](https://en.wikipedia.org/wiki/Indonesia),  [Maluku Islands](https://en.wikipedia.org/wiki/Maluku_Islands) (or Moluccas) and are frequently used as a [spice](https://en.wikipedia.org/wiki/Spice), [flavoring](https://en.wikipedia.org/wiki/Flavoring) or [fragrance](https://en.wikipedia.org/wiki/Aroma_compound) agents in [over the shelf products](https://en.wikipedia.org/wiki/Final_good) such as [toothpaste](https://en.wikipedia.org/wiki/Toothpaste), soaps, or [maquillages](https://en.wikipedia.org/wiki/Cosmetics). Cloves are harvested all the year owing to diverse seasons across several countries. Consumption of whole cloves helps to built perfect immune system. Nutritional Therapeutic Potential effects of clove is due to presence of essential oil which exerts antimicrobial, anti-fungal, anti-viral, an-inflammatory, analgesic, anesthetic activities, Clove oil is very potent as antioxidant and is believed to inhibit post binding entry of severe acute respiratory syndrome (SARS) corona virus into cells in covid attack. Besides it bears anti-platelet activity which helps prevent the formation of thrombus during blood clotting. Therefore, essential oil of cloves is measured as most important candidate to combat the coronavirus as it is believed to provide protection against sudden death which was seen in majority of patients infected by Corona virus (COVID 19).

**Withania somnifera (Ashwagandha)**

It is commonly known as ashwagandha or winter cherry or Indian ginseng. Withania somnifera, is an perennial shrub belonging to family [Solanaceae](https://en.wikipedia.org/wiki/Solanaceae) or nightshade family. It is a small shrub with pale green flowers, simple leaves, and red berries. It is available and cultivated abduntly in India, Middle East, and parts of Africa. Several species in the genus Withania are morphologically comparable to Withania somnifera, for e.g Withania coagulance. In [traditional Indian medicine](https://en.wikipedia.org/wiki/Ayurveda), the plant, mainly its root powder and leaves extract is being used from old eras.

The leaves are most frequently used for tea preparation. The roots are generally dried, pulverized, and taken as a supplement in current era. The extract of Ashwagandha is known to reduce elevated blood sugar levels, cortisol levels, symptoms of depression, and has anti-inflammatory properties also. By improving the cell-mediated immunity Ashwagandha helps to improve the body's defense against viral or bacterial attack. Its potent antioxidant properties aid to protect 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.

**Planax quinquefolius (Ginseng)**

Ginseng is a “King of Herbs.” belonging to family Araliaceae and the genus Panax with the formal name of Panax ginseng C. A. Meyer. [Ginsenosides](https://en.wikipedia.org/wiki/Ginsenoside) and [gintonin](https://en.wikipedia.org/wiki/Gintonin) are main constitutents of Genseng. Different species of Genseng e.g. Korean ginseng ([P. ginseng](https://en.wikipedia.org/wiki/Panax_ginseng)), South China ginseng ([P. notoginseng](https://en.wikipedia.org/wiki/Panax_notoginseng)), and American ginseng ([P. quinquefolius](https://en.wikipedia.org/wiki/American_ginseng)) are commonly characterized by quantitative presence of [ginsenosides](https://en.wikipedia.org/wiki/Ginsenoside) and [gintonin](https://en.wikipedia.org/wiki/Gintonin), [China](https://en.wikipedia.org/wiki/China) and [Korea](https://en.wikipedia.org/wiki/Korea) it is commonly used in the cuisines and medicines. Though modern [clinical research](https://en.wikipedia.org/wiki/Clinical_research) is inconclusive about its medical effectiveness of Ginseng, it is been used in [traditional medicine](https://en.wikipedia.org/wiki/Traditional_medicine) over centuries. There is no substantial scientific evidence about ginseng effectiveness in treating any medical condition and it has not been approved by the US federal agencies as a [Rx drug](https://en.wikipedia.org/wiki/Prescription_drug). During acute respiratory tract infection induced by COVID-19, influenza or chronic diseases which caused horrible threat to human health, ginseng was used to strengthen human immunity against acute respiratory tract infection. Ginseng is a renowned herb in the Ayurvedic scheme of medicine which acts a usual anti-oxidant and reinforces immune system.

**Nutraceuticals and Herbal Extracts**

**Vitamins**

Vitamins are essential ingredients of our diet that have long been known to impact the vulnerable immune system. Vitamins A and D have gathered particular attention in recent times as these vitamins have been shown to have an unanticipated and pivotal effect on the vulnerable immune response. Vitamins (vital amines) are organic compounds that are needed in trace quantities in diet because they cannot be synthesized in sufficient amounts by an living organism. Vitamins and their metabolites are essential for a large number of physiological processes, fulfilling different functions as hormones and antioxidants, as controllers of growth and isolation, in embryonic development and in calcium metabolism among others. A day-to-day input of 20- 50 μg of vitamin D was lately recommended for healthcare workers and smokers in order to enhance their resistance to COVID- 19 infection. Salutary minerals are vital factors of our food. They fulfil a wide variety of functions such as strengthening our bones, impacting muscle and regulating the body’s water balance. They're also contributing factors of hormones and enzymes and other biologically active composites. Some minerals also have an important part to play in the optimal functioning of the vulnerable immune system.

**Selenium**

The importance of selenium is emmence for optimal immune function.

**Zinc**

Elderly individuals are often deficient in zinc, which is essential for immune function.

**Iron**

The strict regulation of serum iron concentration could thus provide favorable clinical outcomes for patients with COVID-19.

**N-acetyl-cysteine (NAC)**

NAC, which is derived from the naturally occurring amino acid, cysteine, is most commonly prescribed to patients suffering from various respiratory complications.

**Probiotics**

Nutritional supplementation with probiotics has been reported to be beneficial for patients suffering from respiratory tract infections.

**Omega-3 fatty acids**

Omega-3 fatty acids have proven to be effective in reducing airway inflammation and bronchoconstriction, have also exhibited efficacy against viral infections (102,103), their potential for use against COVID-19 warrants further investigation

**β-glucans**

β-glucans, which are potent activators of immune cells, β-glucans can help to reduce morbidity and mortality associated with COVID-19.

**Conclusion**

Medicinal plants and herbs are healthier replacements to treat several challenges due to upcoming and unseen diseases like COVID 19. No proper allopathethic medicine was available to treat COVID-19 during the COVID-19 pandemic which emerged abruptly- during December 2019. Various traditional medicinal plants and herbs were used as medicines and resulted in positive health benefits for COVID-19 patients. It not only saved patient life but also saved livelihood of many families. All herbs used during Covid 19 helped in maintaining positive enery among patients and in one way showed power of Ayurveda to the world. In the present review, we have briefed the possible potential uses of medicinal plants and herbs to improve immunity against these viruses.

**References**

1. P.V. Sharma (Ed.), Charaka Samhita of Agnivesha, vol. I, Choukhambha Orientalia, Varanasi (2011)

2. V.C. Patil, N.M. Rajeshwari (Eds.), Sushruta Samhita of Sushruta, vol. I, Chaukhambha Publications, New Delhi (2018)

3. K.R. Murthy Shrikantha (Ed.), Madhava Nidanam of Madhavakara, Chaukhambha Orientalia, Varanasi (2016)

4. V.C. Patil, N.M. Rajeshwari (Eds.), Sushruta Samhita of Sushruta, vol. 2, Chaukhambha Publications, New Delhi (2018)

5. V. Sharma (Ed.), Charaka Samhita of Agnivesha, vol. I, Choukhambha Orientalia, Varanasi (2011)

6. Richardson, J.S. Hirsch, M. Narasimhan, J.M. Crawford, T. McGinn, K.W. Davidson, et al. Presenting characteristics, comorbidities, and outcomes among 5700 patients hospitalized with COVID-19 in the New York City area

7. Arshad, MS; Khan, U and Sadiq, A et al.(2020), “Coronavirus disease (COVID-19) and immunity booster green foods: A mini review”, Food Sci Nutr,8,3971-3976.

8. Srivastava, AK; Chaurasia, JP; Khan, R; Dhand, C and Verma, S (2020), “Role of Medicinal plants of Traditional Use in Recuperating Devastating COVID-19 Situation”, Med Aromat Plants Los Angeles), 9, 359.

9. https://www.merriam-webster.com/dictionary/immunity, Accessed Jan. 2021.

10. Robin, Reid; Fiona, Roberts and Elaine, MacDuff (2011), “Pathology Illustrated- Immunity”, 7th Edition, 87-111.

11. https://www.khanacademy.org/test-prep/mcat/organ-systems/the-immune- system/innate immunity, Accessed Jan. 2021.