

## Herbs in Corona

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### ABSTRACT

The Ayurveda being the science of life propagates the gift of nature in maintaining a healthy and happy life. There are some herbs which can be used in boosting immunity, fight the foreign pathogens and are safe to use with minimal side effects. It will be good to take preventive measures as there are no drugs or vaccines available for Covid -19. There are several herb species that have antioxidant, anti-inflammatory and antimicrobial properties. They have a wide variety of active phytochemicals including flavonoids terpenoids, polyphenols saponins alkaloids, proteins and peptides.

### **Introduction:**

The SARS- CoV -2 virus is responsible for ongoing Corona disease. It primarily attacks lung alveoli for its replication. The spike protein of the virus binds to Angiotensin converting Enzyme -2 ( ACE-2) receptors on the surface of type 2 pneumocytes of alveolar lining which are internalised and +ssRNA is released with the help of host ribosomal machinery the RNA polymerase ( RdRp) enzyme SARS-CoV -2 synthesizes its polyprotein and multiplies its +ssRNA. The new copies of sars-CoV are

released in to alveolar sac by destroying the infected pneumocytes. The inflammatory mediators released after pneumocyte damage recruit immune cells at the infected site. Macrophages released inflammatory cytokines in to the blood leading to vasodilatation of blood vessels increasing capillary permeability of endothelial cells. Neutrophil releases reactive oxygen species (ROS) and proteases to destroy viruses which also damage normal pneumocytes and generate cellular debris in

alveolar space. These inflammatory and immune responses result in alveolar consolidation leading to increased respiratory rate followed by cough, the systemic inflammatory response acts as messengers to hypothalamus to increase body temperature in some patients the cytokine response goes out of control leading to excessive collateral damage to organs with a possible progression to death.<sup>1</sup>

Presently there is no cure for the disease so prevention should be taken on priority till any definitive treatment is discovered or vaccine is developed.

Ayurveda's extensive knowledge is based on preventive care derives from the concept of Dincharya, Ritucharya and Sadvitra (code of conduct). It is plant based science to remain healthy and for the sick to regain health. The awareness about plants which are in our surroundings and in day to day use can be helpful in fighting against various infections. Our Ministry of AYUSH recommended certain advice to boost our immunity with special reference to respiratory health.<sup>5,7</sup>

In Charaksamita there is also a chapter about Janpada Dymasa Vyadhi which means world-wide epidemic and advised to stay at home. This is a period to follow healthy Dincharya -wake up early morning, after routine kriya have tea with ginger, cinnamon and cardamom, Tulsi or even mint should be used for making tea. These herbs will boost energy as well as immunity.<sup>6,7</sup>

Some commonly used culinary herbs, spices, and herbal teas have also exhibited antiviral activities. They have antiviral effect either by inhibiting the formation of the viral DNA or RNA or inhibiting the activity of reproduction. The use of dietary therapy and herbal medicines to prevent Covid infection will help community to fight against this pandemic.

The Ayurvedic Rasayana are known for their immune modulator activities. The adaptogenic

and regenerative properties of rasayana botanicals help to maintain physiological homeostasis.

### Overview of medicinal plants

The use of medicinal plants for prevention and cure of medical problems is preferred by large number of people all over world.

The plants and herbs resources are unlimited but because of increasing population resources are decreasing fast. Virtually cultures around the globe have relied historically and continue to rely on plants for primary care; around 40% of modern drugs are derived from natural sources using either natural substance or synthesized version.

The medicinal plants have various chemical constituents which have ability to stop the replication cycle of various types of DNA and RNA viruses. The compounds from natural sources can be utilized to control viral infection. A viral infection is mostly seasonal and is often treated with proper medication; some herbs known to have antiviral properties can be used in terms of treatment and improving immunity as well. They inhibit the growth of pathogens and boost immunity and fight foreign pathogens.

There are more than 5000 different types of virus that can cause serious disease like common cold, flu. Hepatitis, HIV, Virus is small infectious agent that replicates only inside living cells and can infect all forms of life like human, animal, plant and other microorganisms. Corona Virus is a new virus and till date no treatment or vaccine is available so it is very important to boost immunity and follow other instructions like maintenance of distance between people, proper hygiene and minimum exposure. Every virus is unique in its structure and behaviour, the herbs that seem to work for other viral infection will need to be tested to

see its effect on corona virus. There are some plants which are commonly used in our kitchen can be helpful in fighting with various diseases as they have antioxidant properties.

**Ginger-** It belongs to Family Zingiberaceae and its botanical name *Zinger officinale*. It is a common herb used with tea and other food preparations. It have antiviral, antibacterial and anti-inflammatory properties. Ginger contains compounds like gingerols and gingerone that helps to prevent growth of the virus. It is most common used herb to protect respiratory system. Fresh ginger is more beneficial as in comparison to dried ginger. It is used in nausea resulting from pregnancy and chemotherapy. It is also used as anti-inflammatory and in reducing muscle pain. It has antiplatelet activities in dose of 5gram or more will be required for the above effect. It is good sources of antioxidants but do not provide calories or vitamin.<sup>2,3,4</sup>

**Tulsi**— Holy basil it is commonly found in every Indian home. It belongs to family Lamiaceae and its botanical name is *Ocimum sanctum*, *ocimum tenuiflorum*. There are phytochemicals present like oleanolic acid, urosolic acid, rosmarinic acid, eugenol, carvacrol. Essential oils like  $\beta$ -caryophyllene,  $\beta$ -elemene, and germacrene. It has antiviral, immune modulator, anti-inflammatory, radioprotective properties. A study revealed that basil contains compounds like apigenin and ursolic acid which is effective on herpes, hepatitis and enterovirus. It is very strong antioxidant agent and helpful in protecting respiratory system and improving immunity.<sup>2,4,7</sup>



Tulsi

**Ashwagandha** - This plant is known as Indian Ginseng. It belongs to family Solanaceae, botanical name is *Withania somnifera*. It has strong anti-inflammatory and antioxidant properties that improves immunity. It produces immunoglobulin and enhance immunity response and suppress cytokines to treat several inflammatory disease too. It is also rich source of flavonoids, antioxidants, alkaloids amino acids, neurotransmitters and other nutrients. It is helpful in management of thyroids disease and diabetes too. Researchers from IIT Delhi and AIST Japan reported that Ashwagandha beneficial in fighting the new variant of corona virus. The withanaone a natural compound present in Ashwagandha blocks the activity of Mpro or main protease which is a type of protein essential for reproduction of Corona virus. It was found to be the most potent immune modulator through its potential to modulate T cell differentiation, NK cell cytotoxicity as well as T cell, B cell and NOD-like receptor signalling pathways. Molecular docking studies showed that several phytoconstituents possess good affinity for the Spike protein, Main Protease and RNA dependent RNA polymerase of SARS -CoV-2 suggesting their application for the termination of viral life cycle. Further, predictive tools indicate that there would be beneficial herb-drug pharmacokinetic-

pharmacodynamic interactions with concomitantly administered drug therapy. These are Ayurvedic rasayana can be tried in terms of preventive as well as therapeutic purpose.<sup>1,7,11</sup>

**Giloy – Guduch Amrita** Family Menispermaceae Botanical name *Tinospora Cordifolia*. It is also known as Amrita a self explanatory name. It contains antioxidants that protects our body and it also have antipyretic properties too. It provides protection against bacterial and viral infection too. It is effective in Dengue fever in terms of improving platelet counts. It is beneficial for heart disease, diabetes, jaundice and arthritis, also known as the Ayurvedic root of immortality has wondrous healing powers. It possesses anti-inflammatory, anti-cancer, antipyretic, anti-oxidant and immunomodulatory properties. With the high antioxidants present in the compound, the drug can boost immunity and fight free radicals. It contains berberine is known for its antiviral properties. It will be helpful in fighting some of the symptoms associated with COVID-19.<sup>1,7,11</sup>



Giloy

**Shatavari** –family Asparagaceae botanical name is *Asparagus racemosus*. There are certain alkaloids are isolated from satavari roots. Asparagamine A, isolated from root of the plant. Steroidal saponins, shatavaroside B, Filiasparoside C,

satavarins, immunoside are isolated from root of the plant.<sup>1,7</sup>

**Pippali** - It belongs to Family Piperaceae Botanical name is *Piper longum*. Kalimirch is one of the ingredient of Trikatu. Trikatu is commonly used for respiratory tract infection and chronic pain is combination of Ginger, Pepper and Pippali. Pippali enhances the absorption of Giloy when used in combination as suggested by Ayush department. Peepli is a traditional medicinal herb which is also known for its strong aromatic notes. The regular use of pippali root may helpful in curbing down symptoms of respiratory tract infection, bronchitis, cold, cough, asthma. It also improve blood circulation strengthen immunity and useful in relieving pain because of its anti-inflammatory properties.<sup>7,11</sup>

**Yastimadhu, Mulethi or Liquorice**- It belongs to family Fabaceae. The botanical name is *Glycyrrhiza glabra*.

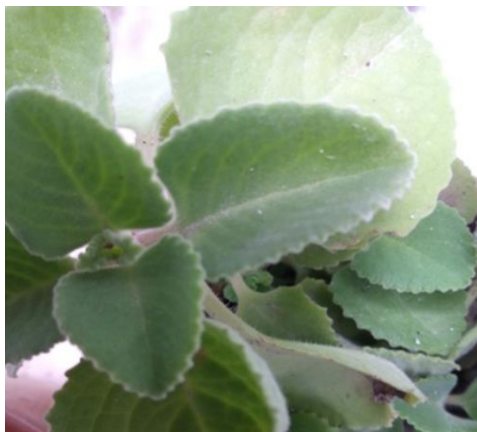
The sweet herb, also known as mulethi or liquorice has been hailed for its therapeutic benefits, especially for those who are suffering from a cough, cold or flu. Its anti-inflammatory properties are helpful in problems related to sore throat and cough.

The sweetness in Liquorice comes from glycyrrhizin which is 30-50 times the sweetness of the sugar. The phytoestrogens present are isoflavene glabrene and isoflavane glabridin are present in root of mulethi.

It protects lung from inflammation by inhibiting cortisol metabolism one of the cause behind inflammation. It has immunomodulator properties.<sup>7,11</sup>

**Ajwain or caraway.** It belongs to family Apiceae Botanical name *Achyspermum ammi*. Ajwain is used in traditional medicine various disorders it contains thymol, gamaterinene, p-cymene and other compounds which are predominantly

terpenoids. Its properties in literature as antifungal, hypolipidemic, antihypertensive, abotifacient, antitussive is reported.<sup>13</sup>



Ajwain

**Fennel-** Family Apiceae Botinical name Foeniculum vulgare. The main compound of fennel seeds is trans anethole which is found to be quite effective against herpes virus, it boosts immunity and decrease inflammation in the body. The selenium which is present in fennel seems to stimulate production of killer T-Cells, which can improve immune response to any kind of infection. Raw fennel is good source of Vitamin C, which is essential for collagen synthesis and also works as antioxidant. Choline present in fennel is helpful in improving memory, learning and muscle movements.

**Garlic.** It belongs to family Amaryllidaceae, botanical name is Allium sativum. It has medicinal properties. It, effectiveness against influenza A and B HIV HSV-1, viral pneumonia and rhinovirus is reported. Garlic contains sulphur containing compounds allacin, aioene, diallyl polysulfides vinylidithinis, S-allylcystene and enzyme. Saponins flavonoids and Maillard reaction products which are not sulphur containing compounds. Thomas Sydenham valued it application in small

pox. Garlic was used as an antiseptic to prevent gangrene during world war I and II.<sup>5,7</sup>

**Coconut oils** – It have Lauric acid and caprylic acid which ae helpful in boosting immune system.<sup>10</sup>

**Resveratrol-** There are certain food items rich in resveratrol like peanut, pistachios, grapes blueberries, strawberries or even cocoa are helpful in fighting stress and infections.<sup>9</sup>

**Vitamin C.** The fruits rich in vitamin C are amla, red pepper, lemon and orange. Consumption of these fruits will help in fighting against certain viral and bacterial infections.<sup>9</sup>

**Amla** – Family – Phyllanthaceae Botanical name Phyllanthus emblica. Every part of Amla tree like bark, fruits, and leaves and flowers have medicinal properties. Fruit is sore and astringent (kasaya) in taste (rasa) with sweet (madhuram) bitter (tik) and pungent (katu) secondary taste (anurasas) its qualities are light and dry ( laghu and ruksha) and post digestive effect is sweet (madhuram) and energy is cooling. It is primary constituent in ancient herbal rasayana called chyawanprash. Fruits contain high amout of ascorbic acid Vitamin C, wllagitannins, emblicannA. 37% Emblicanin B 33%and pedunculagin 14%bitter taste is derived from these ellagitannins. It also contains punicafolin, phyllanemblininA, Phyllanembin other poly phenols such as flavonoids, kaempferol ellagic acid and gallic acid. Vitamin C plays important role in prevention of Covid infection and advised by AYUSH to take chyawanprash .<sup>10,13,16</sup>

**Neem** –Family Meliaceae Botinical name Azadirachta indica. Ayurveda was first to bring its antihelminthic, antifungal,

antidiabetic, antibacterial, antiviral, contraceptive and sedative properties. In skin disease detoxify blood, and balance blood sugar level. But it has some toxic effect when used in large doses it can lead to encephalopathy, miscarriage, infertility, and low blood sugar. Every part of neem is useful. Nimbin and nimbidin are main constituent responsible for qualities. Neem oil should be used in small children can lead to death. Long term use can be harmful for kidney and liver. Large amount of neem consumption can be fatal for patient, judicious use should be done.<sup>8,13</sup>



Neem

**Haldi**, Haridra, Turmeric is from family Zingiberaceae, botanical name is Curcuma longa. It is used in most of the our food items. It has potential effect on viral infection and have anti-inflammatory properties. It is a strong antioxidant, and immunomodular. Phytochemical present in turmeric are diarylheptanoids curcumin, demethoxycurcumin and bisdemethoxy curcumin are present<sup>7,13</sup>



Turmeric

**Lavang**, Clove- family Myrtaceae botanical name Syzygium aromaticum. Long use in traditional medicine eugenol is effective in dental pain and treatment of dry socket its role in reduction of fever is still unclear but its use in aroma therapy is reported.<sup>13</sup>

**Dalchini (Cinnamon)** Family Lauraceae Botanical name Cinnamomum verum, cinnamomum Cassia. It has been used as spices in daily life without any side effects. Its antioxidants, anti-inflammatory, antidiabetic, anticancer activities are reported. It also have activities against neurological disorders like Parkinson's and Alzheimer's diseases. It is used in form of bark, essential oils, phenolic compounds, flavonoids and isolated compounds. The antioxidants, and antimicrobial activities may occur through the direct action on oxidants or microbes whereas the anti-inflammatory, anticancer and antidiabetic activities occur indirectly via receptor mediated mechanisms.<sup>13,17</sup>

**Kalimirch**, Black Pepper - Family Piperaceae, Botanical name is Piper nigrum. It increases the absorption of selenium, vitamin B 12, beta-carotene and curcumin. It is described in Buddhist Sammannaphala Sutta. Buddhists used to carry this folk medicine. It contains phytochemicals including amides, piperidine, pyrrolines.<sup>13</sup>

**Munakka (Raisin)** – Munakka or Raisin is basically a variety of dehydrated or dried grapes. In Indian system of medicine it has high amount of natural sugar sucrose and

glucose which are considered very helpful in gaining weight. It is rich sources of boron a micronutrient and calcium which are helpful strengthening of bones and teeth. It has Catechin( antioxidant), Kaempferol ( flavonoids ) which are helpful in decreasing growth of colon cancer.<sup>13</sup>

**Lemon-** It belongs to family Rutaceae. Botanical name is Citrus limon. Lemon is rich source of Vitamin C. It contains numerous phytochemicals including terpenes, polyphenols and tannins. Vitamin C is ascorbic acid which is an essential nutrient involved in tissue repair and enzymatic production of neurotransmitter. It is use for prevention of treatment of scurvy.<sup>13</sup>

**Ginseng root.** It is described in traditional Chinese medicine have anti-inflammatory properties and helpful in boosting immunity and brain function. Panax ginseng, Panax notoginseng are Korean and Chinese ginseng.<sup>9</sup>

In Ayurveda Agni and Bal restoration is very important, Agni is energy responsible for metabolism and transformation and bal is innate/acquired immunity and strength. The preventive aspect of o management aims to maintain health of a healthy individual and improve disease resistance capacity which is key factor in prevention of Covid-19 infection

These can be achieved by proper use of Aahar (food), Vihar( life style) and administration of various oushadhis (medicines), Resayana (immunomodulators) panchkarma.

**Aaharam**– It is the most important pillars of life and it is described in Ayrveda as Mahabheshajam (above all medicine). It Improves vitality, strength and ojas that is immunity so wholesome food is foremost factor for growth and unwholesome food is the sources of all diseases. The balanced diet in Ayurveda it should have all six components Madhur, Amla, Lavan ,Katu ,

Tikt and Kasaya . It is comprised of consuming warm unctuous balanced diet and after digestion of previous meal.

**Viharam** life style is important pillar to maintain good health as well as to cure diseases it gives the understanding about social relation, behaviours. It includes dincharya, ritucharya and sadvitra (code of conduct) etc.<sup>6,9</sup>

## Recommendations of AYUSH Department of India

### A. General Measures.

1. Drink warm water through the day
2. Daily practice of Yogasana, Pranayama and meditataion for atleast 30minutes.
3. Spices like Haldi( Turmeric ), Jeera (Cumin ), Dhaniya ( Coriander ) and Lahsun ( Garlic ) are recomended in cooking.

### B. Ayurvedic Immunity Promoting Measures.

1. Take Chyanvanprash 10 mg in morning, diabetics should take sugar free Chyanvanprash.
2. Drink herbal tea,that is kadha made up of Tulsi (basil), Dalchini (Cinnamon), kalimirch (Black pepper), Shonth (Dry ginger), and Manakka (raisin) once or twice per day add jaggary/lemon juice .
3. Golden milk Half tea spoon Turmric in 100 ml hot milk once or twice per day.

### C. Simple Ayurvedic procedures.

1. **Nasya**- nasal application of Sesame oil, coconut oil or ghee in both nostrils in the morning and evening.
2. **Oil pulling therapy**- Take one spoon of sesame or cococnut oil in the mouth for 2,3 minutes gargle it and then spit it off. Drinking is not advisable it should be followed by warm saline gargle.

#### D. During dry cough sore throat

1. Steam inhalation with Ajwain (Caraway seed) or fresh Pudeena leaves once in a day.
2. Lavang- clove powder can be mixed with natural sugar/honey can be taken 2-3 times per day in case of dry cough or throat irritation. But if symptoms persists it best to consult Physician.<sup>10</sup>

There are few potential approaches to use dietary habit in prevention against Covid -19 that is use of herbs, food as diet supplements to prevent infection and to strengthen immunity. Use as air disinfectant and as surface sanitizing agent to provide a disinfected environment. Coating of mask with antiviral agent can be beneficial but toxicity to the human should also be considered. Traditionally steam inhalation is used for upper respiratory tract infection.

Aroma therapy can be beneficial. The antibacterial and antiviral activities of essential oils can be used as air sanitizer for prevention of disease.

#### Ayush-64

“The Central Council For Research In Ayurvedic Sciences developed this formulation some 10-15 years back for frequent fevers and especially malaria. It is a combination of seven Ayurvedic herbs including saptaparna, katuki, kiratatikta and kuberaksha among others. “It is an antipyretic which opens up the micro channels of the body so that all the nutrients are well-absorbed. According to the Ayurveda school of thought, any disease, including COVID-19, which is feverish in nature, is caused by a low-performing digestive system. “AYUSH64 is a bitter-tasting formulation which enhances digestion, enabling your body to absorb nutrients well. That is how it will help in fighting COVID-19. Moreover, it also

improves immune system, which is crucial or fighting with any disease.<sup>11</sup>

#### Conclusions:

The prevention of this pandemic condition can be achieved by adapting proper food habits, healthy life style and boosting immunity. Immunity is vital factor for good outcome of this pandemic. There is no definitive treatment modality or medication is available for treatment of Covid -19 infections it will be good to take preventive measures. The herbal products are widely used and safe but all drugs carry risk, it can produce allergic reactions. The use of all herbal agents should be with all precaution and in supervision of specialists .The creation of awareness is very important among all people regarding prevention of Covid- 19infection.

Above all mental health and safety is on the top priority. Do not be panic. Keep faith in God, do your duties let him think about you.

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