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## Role of traditional medicines as a challenge for Coronavirus (Covid-19)

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Most of the countries in the world are facing the problem of disease caused by Novel coronavirus (covid-19) with symptoms of higher grade flu like symptoms or with no symptom. The infection spreads through contact with the person suffering/suffered from coronavirus symptoms like sneezing, high fever, cough and ultimately blockade of respiratory system. Sometimes symptoms of diarrhea and dysentery were also detected at advanced stage of the disease. Till now any effective medicine or vaccine could not be developed for its prevention and getting relief. Only trial and error by applying some antimalarial drugs chloroquine hydroxide alongwith some other antiviral infections is used and up to 38% are being recovered in India as well as other countries. Under such circumstances strengthening immune system becomes only option for preventing from this viral disease and our traditional medicines are playing vital role for immunity strengthening. Accordingly, some herbs either singly or in combination form have been suggested as preventive measure for coronavirus through this communication.

**Keywords:** Ardraka, Ashwagandha, Coronavirus, Pippali, Traditional medicine

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Coronaviruses are a group of related RNA viruses causing diseases in mammals and birds. In human body, these viruses cause respiratory tract infections that can be mild to acutely lethal. Mild illnesses represents some symptoms of common cold which may also be due to certain other viruses like flu and rhinoviruses, while lethal varieties can cause Severe Acute Respiratory Syndrome (SARS), Middle East respiratory syndrome (MERS-CoV) was first identified in Saudi Arabia and COVID-19<sup>1</sup>. Symptoms in other species vary: in chickens, they cause an upper respiratory tract disease, while in cows and pigs they cause diarrhea. Till date there are no vaccines or antiviral drugs to prevent or treat human coronavirus infections except use of an antimalarial drug Hydroxychloroquine only that too on trial and error basis.

Coronaviruses belong to the subfamily *Orthocoronavirinae*, in the family *Coronaviridae*, order *Nidovirales*, and realm *Riboviria*<sup>2,3</sup>. They are enveloped viruses with a positive-sense single-stranded RNA genome and a nucleocapsid of helical symmetry<sup>4</sup> wrapped in a icosahedral protein shell<sup>4</sup>. The genome size of coronaviruses ranges from

approximately 26 to 32 kilobases, one of the largest among RNA viruses<sup>5</sup>. They have characteristic club-shaped spikes projecting from their surface, which in electron micrographs create an image reminiscent of the solar corona and the name was derived from this corona type structure<sup>6</sup>.

The name "coronavirus" is derived from Latin *corona*, meaning "crown" or "wreath", The name was firstly given by June Almeida and David Tyrrell who first observed and studied human coronaviruses. The word was first used in print by an informal group of virologists to designate the new family of viruses<sup>7</sup>. The name refers to the characteristic appearance of virions (the infective form of the virus) by electron microscopy, which has a fringe of large, bulbous surface projections creating an image reminiscent of the solar corona or halo<sup>8</sup>. The said morphological feature is created due to proteins on the surface of the virus given by the viral spike peplomers<sup>9</sup>.

Large number of the symptoms caused by coronavirus infection is very much similar to many of the other viral diseases like high body temperature, sneezing, coughs shriveling cold and ultimately respiratory blockade and heart failure causing death of the patient. More or less similar symptoms are

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observed in common viral flu. Since till now no vaccine could be developed in any part of the world, only self-precautions to avoid being in touch with other patients is the safety measure. Maintaining social distance with any unknown person whose history of contamination is not known and keeping the body free from variable climatic conditions causing unnecessary occurrence of flu- like symptoms. Hence keeping locked is not only the ultimate solution to keep protection against coronavirus which is entering the human body and develop the favorable condition inside the body for its multiplication accordingly as long as the body will develop strong immune system to release sufficient antibodies for the action against the virus.

Indian system of medicines like Ayurveda, Homoeopathy, Siddha and Unani as well as Yoga and Naturopathy are serving the purpose of keeping body healthy with high grade of immune system. Ayurveda system of medicines is serving a lot by the use of appropriate body behavior, food habit, exercise and Yoga to make the body fit to fight from the infectants in our surroundings followed by the use of medicines for curing ailments as explained while defining Ayurveda as follows:

हिताहितं सुखं दुःखमायुस्तस्य हिताहितम्।

मानं च तच्च यत्रोक्तमायुर्वेदः स उच्यते ॥ - (चरक संहिता १/४०)<sup>९</sup>

Various precautionary measures have already been described in Ancient Ayurvedic literatures right from the beginning of the history. During the course of coronavirus spread in our country it has been observed that people contracting this disease lose their patience and developed other sickness symptoms which become the cause of weak body system and ultimately death. Gradually with passing time people are developing survival skills. Therefore, in present circumstances keeping oneself mentally fit is the secret for survival. In Ayurvedic system of medicines, large numbers of herbs have been used for improving our health or to cure seasonal flu-like symptoms. Ayurveda provides commendable services in improving the body health according to the body parts or we can say in improving functioning of the separate body parts. Some of the very important medicinal plants helpful in enhancing immune system as well as checking from infections are as follows:<sup>10-13</sup>. The paper is supported with photographs of the medicinal plants of much interest (Plates 1, 2 and 3).



Plate 1 — Photographs of plants described for use for prevention during Coronavirus.  
(Photographs taken from Google images)



Plate 2 — Photographs of plants described for use for prevention during Coronavirus.  
(Photographs from Google images)



Plate 3 — Photographs of plants described for use for prevention during Coronavirus.  
(Photographs from Google images)

*Abutilon indicum* (L.) Sweet (Malvaceae): Root is used in the name of Atibala as a tonic which improves body functioning. Various parts of the plant are used as a demulcent, aphrodisiac, laxative, diuretic, sedative, astringent, expectorant, tonic, anti-inflammatory, anthelmintic, and analgesic and to treat leprosy, ulcers, headaches.

*Achyranthes aspera* L. (Amaranthaceae): In the name of **Apamarga**, the plant is used as multidisciplinary tonic also in indigestion, cough, asthma, anemia and jaundice.

*Acorus calamus* L. (Araceae): In the name of **Vacha** the plant is useful in respiratory and cardiac trouble.

*Bacopa monnieri* (L.) Wettst (Scrophulariaceae): In the name of **Brahmi**, it is used in improving memory, reducing anxiety, and treating epilepsy. In fact, it boosts brain function and alleviates anxiety and stress.

*Aegle marmelos* (L.) Correa (Rutaceae): In the name of **Bilva**, it possesses antidiarrhoeal, antimicrobial, antiviral, radioprotective, anticancer, chemopreventive, antipyretic, ulcer healing, antigenotoxic, diuretic, antifertility and anti-inflammatory properties, which help it to play role in prevention and protection.

*Aloe vera* (L.) Burm. f. (Asphodelaceae): In the name of **Ghritakumari**, it is used in digestion, liver disorders and ulcers.

*Bacopa monnieri* (Scrophulariaceae): In the name of Brahmi, it is used in Ayurveda System of medicine for the preparation of memory tonic.

*Berberis aristata* DC. (Berberidaceae): In the name of **Daru Haridra** it is used as tonic.

*Centella asiatica* (L.) Urb. (Apiaceae): In the name of **Mandukaparni** its whole part is useful in improving the immune system by enhancing memory and healing nervous weakness as nerve tonic. In the markets of Assam and Arunachal Pradesh it is sold in fresh form in the name of **Manimuni**.

*Cinnamomum verum* J. Presl. (Lauraceae): In the name of **Dalchini**, Its stem bark is highly useful in respiratory disorder as well as in developing body immunity. It is widely distributed and cultivated in Southern hills and Arunachal Pradesh.

*Citrus medica* L. (Rutaceae): In the name of **Nimbu**, its juice with fibrous follicles is useful in improving the body immunity. It is widely cultivated in every part of the Country.

*Coptis teeta* Wall. (Ranunculaceae): In the name of **Mishmi Teeta** due to its occurrence in the Mishmi

hills of Arunachal Pradesh and the roots being a rich source of berberine, is useful in improving body immunity.

*Curcuma caesia* Roxb. (Zingiberaceae): In the name of **Narkachura**, its rhizome is used for protection against respiratory diseases due to richness of curcumine.

*Curcuma longa* L. (Zingiberaceae): This is well known plant in the name of **Haridra/ Haldi** and is regularly in use as a spice as well as in relieving pain and maintaining respiratory function.

*Garcinia pedunculata* Roxb. ex Buch. Ham (Clusiaceae): In the name of **Amlavetas** as well as **Thekra** in Assam, it is a rich source of vitamin-C useful in improving body immune system

*Gentiana kurroo* Royle (Gentianaceae): In the name of **Ranke** and sometimes confused with the name of **Mishmi Teeta**, in Arunachal Pradesh, it is highly useful in fever and improving the body immune system.

*Glycyrrhiza glabra* L. (Fabaceae): In the name of **Yashthi Madhu/ Mulaithi**, its root is used in cold fever and cough.

*Hippophae rhamnoides* L. (Elaeagnaceae): In the name of **Shibokthorn** in the hills of Ladakh, its fruits are used as a substitute for Amvala.

*Illicium griffithii* Hook. f & Thomson (Schisandraceae): In the name of **Staranies** in Arunachal Pradesh particularly in alpine hills of West Kameng and Lower Subansiri district it is widely used in trade as spice and it is useful in respiratory disorders.

*Juglans regia* L. (Juglandaceae): In the name of **Aksoda/Akharot**, it is used as heavy nutritious dry food enhancing memory and respiratory diseases widely distributed and cultivated for trade in Kashmir, Uttarakhand, Himachal Pradesh and West Kameng district of Arunachal Pradesh.

*Leucas zeylanica* (L.) W.T. Ait. (Lamiaceae): In the name of **Dronapushpi** in Ayurveda, this plant is used as vegetable in Assam and useful in nasal blockade a complicated symptom of sinusitis.

*Mentha spicata* L. (Lamiaceae): In the name of **Pudina**, it is used to treat in many stomach disorders, inflammation, and treatment of **fever** headache, cold and asthma.

*Nardostachys jatamansi* (D. Don) DC. (Caprifoliaceae): In the name of **Jatamansi**, it is useful in improving digestive system, circulatory system, nervous system, respiratory system, urinary system.

***Ocimum sanctum* L.** (Lamiaceae): In the name of **Tulasi**, it is used for healthy heart, cough, fever, asthma, headache and diabetes.

***Phyllanthus emblica* L.** (Phyllanthaceae): In the name of Amlaki/Amvala this plant is cultivated as rich source of ascorbic acid to enhance vitality and improves digestive system

***Picrorhiza kurroa* Royle ex Benth.** (Plantaginaceae): In the name of **Katuki** in Ayurvedic system of medicine, it is traditionally being used to treat disorders of the liver and upper respiratory tract, reduce fevers, and to treat dyspepsia, chronic diarrhea,

***Piper longum* L.** (Piperaceae): In the name of **Pippali** it is used to improve appetite and digestion, as well as treat stomachache, heartburn, indigestion, intestinal gas, diarrhea, and cholera. It is also used for lung problems including asthma, bronchitis, and cough.

***Piper nigrum* L.** (Piperaceae): In the name of **Maricha/Kali Mirch**, it is widely used in potent spice and possesses antioxidant and anti-inflammatory properties. It also improves cholesterol levels, blood sugar control, and brain and gut health.

***Senegalia catechu* (L.f.) P.J.H. Hurter & Mabb.** (Fabaceae): In the name of Khadir it is used for diarrhea, swelling of the nose and throat, dysentery, swelling of the colon (colitis), bleeding, indigestion.

***Sida cordifolia* L.** (Malvaceae): In the name of **Bala**, it is used to treat asthma, tuberculosis, the common cold, flu, headaches, nasal congestion, cough and wheezing.

***Sida rhombifolia* L.** (Malvaceae): In the name of **Mahabala**, it is used as anti-inflammatory and possesses antioxidant property as tonic.

***Solanum violaceum* Ortega** (Solanaceae): In the name of Vrihati, it is useful in treating cold, cough, sore throat and asthma as expectorant.

***Solanum virginianum* L.** (Solanaceae): In the name of **Kantakari**, it is used in cough and flu besides many other uses.

***Swertia chirayita* Roxb. ex Karcht** Gentianaceae): In the name of **Chirayita** in Ayurveda it is used in fever, analgesic and liver disorders to strengthening the body as well as in reducing blood sugar.

***Syzygium aromaticum* (L.) Merr. L. M. Perry** (Myrtaceae): In the name of **Lavanga/clove**, it is used to improves respiratory disorders.

***Taxus wallichiana* Zucc.** (Taxaceae): In the name of **Talisa** in Ayurveda and Unani medicines, it is used by the native populations for treating common cold, cough, fever and pain.

***Terminalia bellirica* (Gaertn.) Roxb.** (Combretaceae): In the name of **Vibhitaka/Bahera** in Ayurveda it is used to protect the liver and to treat respiratory conditions, including respiratory tract infections, cough, and sore throat.

***Terminalia chebula* Retz.** (Combretaceae): In the name of **Haritaki/Harad** in Ayurveda, it is used as a douche for treating vaginal infections. In traditional Ayurvedic medicine, it is used as a health-harmonizer in combination with *Terminalia bellerica* and *Phyllanthus emblica* in the name of Triphala.

***Terminalia citrina* (Gaertn.) Roxb.** (Combretaceae): In the name of **Hilika** in Assam, the fruits are used similar to *Terminalia chebula* and used in various drug preparations as its substitute.

***Tinospora cordifolia* (Willd.) Hook. f. & Thomson** (Menispermaceae): In the name of **Amrita/Guduchi/Giloy**, it is commonly used in allergic rhinitis, upset stomach, gout, lymphoma and other cancers, rheumatoid arthritis, hepatitis, peptic ulcer disease and fever.

***Withania somnifera* (L.) Dunal** (Solanaceae): In the name of **Ashwagandha**, it is used as a tonic especially as antiageing.

***Zingiber officinale* Roscoe** (Zingiberaceae): In the name of **Ardraka/Shunthi/Ginger**, it is used for stomach upset, motion sickness, cough, nausea, and vomiting.

During the widely spreading corona virus disease, precautions is the need of time and herbal medicines are proved to be the best as precautionary medicine in respect of controlling normal cold, allergic cough, sneezing or enhancing immune system of the body. In total 38 herbs have been selected from the herbs described in ancient Ayurvedic literatures. *Acorus calamus* in combination with *Bacopa monnieri* or *Centella asiatica*, *Nardostachys jatamansi* and *Valeriana jatamansi* is useful in cough, cardiac and nerve weakness. Both *Bacopa monnieri* and *Centella asiatica* are sold in the crude drug shops in the name of Brahmi. Fruits of *Aegle marmelos* are used as preventive for dysentery one of the later symptom during Covid -19 infection. *Aloe vera* juice along with Amvala juice helps the body system to improve digestive system which resist any kind of viral



infection prior to attack of Covid-19 virus. Bark of *Cinnamomum verum* is recommended for use singly or in combination with *Piper nigrum* and *Mentha spicata* or *Ocimum sanctum* in the form of decoction or powder. *Mentha spicata* and *Ocimum sanctum* both can singly or in combination can be used to take steam orally. Use of *Citrus medica* juice or slices with peals boiled in water is recommended to take orally. Decoction of roots of *Coptis teeta* is recommended for taking orally in the areas of occurrence. Use of *Curcuma caesia* and *Curcuma longa* is similar; either decoction of fresh rhizome or in powdered form is helpful as precautionary measure. Fresh slices or in dried form of *Garcinia pedunculata* and *Hippophe rhamnoides* can be used directly like *Phyllanthus emblica* in their areas of occurrence. *Illicium griffithi* can only be use as spice with other spices. Fruits of *Juglans regia* may be in usual way of taking other dry fruits. Use of *Picrorhiza kurroa* root either singly or in combination with *Swertia chirayita* powder or decoction form helps in reducing fever and improving immune system. Concentrated extract of bark of *Senegalia catechu* improves throat sore and used in preparing Khadiradi Vati. Use of *Sida cordifolia* and *Sida rhombifolia* root in decoction form can be taken before or during infection. Plant decoction of *Solanum violaceum* and *Solanum virginianum* or Kantakari Syrup is used in flu and cough and fever with promising effect. Combination of *Phyllanthus emblica*, *Terminalia bellirica* and *Terminalia chebula* in the form of Triphala Churna is highly useful in strengthening immunity, improving cough and digestive system. Leaves of *Taxus wallichinan* in the name of Talis Patra is used in cough and related diseases as the Talisadi Churna. *Terminalia citrina* is also used in place of *Terminalia chebula*

*Tinospora cordifolia* is widely used as multiple use tonic to cure most of the diseases, flu and to enhance body immunity Giloy Vati and Amritarisht are the best formulations for taking. Plants of *Coptis teeta* and *Gentiana kurroa* are useful to serve the purpose of *Tinospora cordifolia* in high hills at the places of their occurrences. Use of *Withania somnifera* root powder is highly beneficial as immunity enhancer.

Food habit during the period of coronavirus outbreak needs to be changed. Sufficient use of fleshy fruits mousami, orange, pineapple, coconut water, kiwi, needs to be taken. Appropriate use of garlic and onion needs to be ensured. Use of Sthul ela (*Amomum*

*subulatum*), Pippali, *Parmelia perlata* Jayaphal in spices and taking tea with Ashwagandha, Maricha, Ela and Ardraka helps in keeping the body well protected. Pouring sesame oil or cow ghee with little amount of camphor or menthol enhances respiratory capacity by clearing the nose. Steaming Warm water with mint and gargle with salt or tea water protects the mouth and nostrils from cough.

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### Conflict of interest

There is no any conflict of interest.

### Author's contribution

**ABK:** Overall management of the study.

**RS:** Overall designing writing and selection of plants related with the study.

**AS:** Manuscript checking and approval.

**BJ:** General discussion in writing the manuscript.

**RM:** Suggesting Ayurvedic approaches in the manuscript.

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