

# Ayurveda: The Prominence of Herbal Medicine in Containment of COVID-19

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## ABSTRACT

The global community is in a vulnerable and intricate state due to the COVID-19 pandemic given the lack of targeted drugs and extreme population making it an arduous journey to the public system of health care towards the extermination of the disease. The essentiality of newer compounds, novel medical instruments, and practices for diagnosis, cure, and prevention of the COVID-19 infection is the greatest concern. Since the persistent waves of COVID-19 are being observed at a variety of location across the globe, and the intensity and mutation of the virus is still possessing an inviolable threat to humanity. Along with conventional medicine, the application of traditional medicine practices using natural and herbal products has been proved effective in several disease conditions. The usage of Traditional Chinese medicine and ayurvedic medicine is used to treat COVID-19 infected patients in China and India respectively marks the contribution and effectiveness of traditional medical therapy in the restriction of the virus. The prominence of herbal products for prophylactic and symptomatic treatment for COVID-19 is notable and recommended by various organizations and governments in the world. All the pragmatic considerations and evidence to use ayurvedic practices on a large scale require further animal and robust human studies. This article reviews various practices, herbal products, effectiveness, case studies and the contribution of ayurvedic medicine, to be used to treat and restrict the viral epidemic and may further provide a forward insight into future learning, evidence compiling, and research in the respective domain.

**Keywords:** Ayurveda, COVID-19, Antiviral, Immunomodulatory, Inflammation.

## INTRODUCTION

Ayurveda is a concept of practicing traditional Indian medicine, founded by Vedic scholars during the ancient period (2500-600 BC). It is mainly focused on illness of a human being, elongating the life span by steady metabolism, and rejuvenating the body by diet and nutrition.<sup>[1]</sup> The use of ayurvedic treatment for any condition alone is debatable since lack of data towards mechanism of action and Ayurvedic-induced toxicity. This further requires rigours animal and clinical studies.<sup>[2]</sup> Ayurvedic medicine showed efficient effect in treating various diseases such as Cancer,<sup>[3]</sup> interstitial lung disease,<sup>[4]</sup> insulin secretion, chronic headache, lung fibrosis and many other chronic diseases. The active components of plants used in Ayurveda alter the inflammatory pathways further linked to curing chronic diseases.<sup>[5]</sup> Infectious diseases like malaria,<sup>[6]</sup> It is also known as the miracle medicine science in some regions, the extraction of medicinal plants used in Ayurveda shows significant effect on viral production of type 1-HIV infection in cellular model.<sup>[7]</sup> It also decelerates the disease progression, improves quality of life in HIV infected individuals.<sup>[8]</sup> A potential antiviral activity is shown by few plant extracts against HSV-2 virus.<sup>[9]</sup> The ayurvedic COVID-19 prophylactic therapy may

have had a key impact in the Indian subcontinent. In India, several measures have been done to take use of Ayurveda's enormous potential in this pandemic. The Ministry of Ayush, a nodal Ministry of Complementary and Alternative Medicine, has produced a collection of Ayurvedic-based suggestions for strengthening immunity and self-management.<sup>[10]</sup> The traditional medicine exploration might give new opportunistic window to explore the new molecules to treat modern day health related issues This article gives a complete insight in to ayurvedic standpoint and the management of COVID-19 which will raise the curtains to the robust research possibilities to tackle and manage diseases.

## MATERIALS AND METHODS

This narrative review is a combination of material collected in bibliographic databases such as Google Scholar, PubMed, and Scopus utilising vocables such as Ayurveda, inflammation, prophylaxis, cytokines, and herbal medications. Only articles published in English were evaluated, and the linguistic filters were used as criterion for choosing literature. Primary and secondary research sources featured scientific

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work, meta-analysis, systematic reviews, and peer reviews. Data that was unpublished, fragmented, or only substantially available, as well as literature in multiple languages other than English, were excluded. The significant proportion of the information in this narration is current, however older information dating back to 1992 is included if it was relevant and necessary. There was no funding from any organizations, and all of the information was downloaded for free.

### Role of Ayurveda in immunomodulation and antiviral activity

According to Ayurveda, preventing illness is almost as vital as treating it, so improving the immune system is necessary which is a natural way to aid the body's immune system against pathogens that cause diseases. According to Charaka Samhita immunity or Bala or Vyadhikshamatva is of three types sahaja bala [Innate], khalaja bala [temporal], yuktirikta bala [Acquired]<sup>[10-12]</sup> Vyadhikshamatva refers to a resistance against deterioration of integrity, composition, proportion, and inter-linkage of individual entity's dhatu (tissues) and doshas (bioenergies).<sup>[11]</sup> Instigation of immunity by herbal products through regulation of immunomodulating pathways

Anti-coronavirus medicines are classified into four groups based on their targets: (i) antiviral therapy, (ii) immune system enhancing therapies, (iii) anti-inflammatory therapies, and (iv) antitoxic treatments. Antiviral medicines restrict viral RNA production by acting on the virus's genetic material, reduce virus replication by acting on the virus's key enzymes, and hinder virus adherence to human cell receptors or the virus's self-assembly process by working on specific structural proteins.<sup>[13]</sup> SARS-COV-2-infected droplets enter the body through the eyes, nose, and mouth. The virus enters the neck and stays there for many hours before unleashing its last attack on the lungs. The virus's fatty acid coat adheres to the wet mucosal layers, allowing it to enter cells via cell receptors. Several treatments indicated in Ayurvedic scriptures are likely to focus on these entry points.<sup>[14]</sup> Breaking the chain of infection, increasing a person's bodily immunity, detecting the illness immediately, and receiving proper medical treatment are the best approaches to avoid COVID-19 infection. Herbal medicines and mineral items are a significant source of potential new antiviral drugs. The discovery of antiviral pathways in these biological agents has shown how they interact with the viral replication cycle, including viral attachment, replication, arrangement, and release and how they target virus-host-specific interactions.<sup>[15]</sup> Pandemic is discussed in Ayurveda in the Charaka Samhita Viman Sthana under Janpadodhwansniya Adhyaya. COVID-19 does not have a treatment. As a result, by improving our own immunity, we can both avoid and protect against this disease. Vyadhikshamatwa is a term used in Ayurveda to describe immunity. Dinacharya, Ritucharya, Aharavidhi, Rasayana Chikitsa, Vyayama, Yoga, and Pranayama are some of the Ayurvedic regimens. All of these are quite beneficial in boosting immunity.<sup>[16]</sup> As a COVID-19 prevention method, AYUSH recently advised drinking Kadha (herbal tea/decoction) with basil, cinnamon, black pepper, ginger ale, and dry grape, as well as golden milk. COVID-19 is more likely to impact those who have infectious or non-infectious disorders and have a weakened immune system. , AYUSH-recommended combination of herbal tea and golden milk, is not limited to strengthening immunity, but may also affect other pathways involved in the development of many illnesses, providing benefits to patients with diabetes and hypertension.<sup>[17]</sup> Immuno-boosting is a topic of discussion among ordinary persons in the COVID-19 pandemic emergency, with most of the information emerging in social, print, and electronic media. Ordinary people wish to utilise it in the hopes of preventing and curing corona virus. As a result, rather than treating existing disorders, there is a growing need for Ayurvedic Immuno-booster (AIB) to enhance the immune system

and prevent coronavirus infection. Several efforts have been initiated in India in response to desire to make use of Ayurveda's enormous potential in this pandemic.<sup>[18]</sup> Rasayana dravyas (immunomodulators medicines) from Ayurveda can be utilised to enhance health. In Ayurveda, Acharya Charaka defined an epidemic condition in Janapadodhwans Adhayay, as well as how to treat these diseases with Panchakarma (five purifying operations), Rasayana Chikitsa (immune-modulators treatment), and Sadvritta (self-healing) (good conduct/health, modulate the immune system, prevent illness, and lower the burden of COVID-19). Medicinal plants like Ashwagandha (*Withania somnifera* (L.) Dunal), Guduchi (*Tinospora cordifolia* (Willd.) Miers), Amalaki (*Phyllanthus emblica* L.), Mulethi (*Glycyrrhiza glabra* L.), Shatavari (*Asparagus racemosus* Willd.), Chireta (*Andrographis paniculata* (Burm.f.) Nees), Tulsi (*Ocimum sanctum* L.), Punarnava (*Boerhaavia diffusa* L.), and Pippali (*Piper longum* L.) can be used to treat the symptoms of COVID-19-related sickness, as may Agastya Haritaki, Anutaila, and AYUSH-64.<sup>[19]</sup> Medicinal herbs have an immunomodulatory impact, which controls the immune system and strengthens the host's protection against illness. As many COVID-19 patients experienced lymphopenia and pneumonia, with raised plasma concentrations of pro-inflammatory cytokine in severe cases, several clinical investigations revealed a tight relationship between neutralising antibody responses and the number of virus-specific T-cells.<sup>[20]</sup> Rasayana is an Ayurvedic speciality that deals with regeneration techniques. Rasayana treatment is a combination of lifestyle, nutrition, and medicine that promotes growth, slows ageing, induces tissue regeneration, and boosts immunity. Rasayana treatment may be effective in the prevention and surveillance of SARS-COV-2 infection due to its ability to boost immunity. Immunomodulation and immune haemostasis have been demonstrated to be beneficial with the botanicals used in Rasayana treatment.<sup>[14]</sup> According to Ayurvedic principles, a prescription comprising Swasari Ras, Giloy Ghanvati, Ashwagandha, Tulsi Ghanvati, and Anu Taila can symptomatically cure COVID-19. Swasari Ras is a traditional Ayurvedic treatment for respiratory disorders. One of the medications in the investigated consortia is a poly herbo-mineral formulation. In Indian traditional medicine, it's often used to treat asthma and other significant respiratory issues including excessive mucus production, bronchitis, and rhinitis.<sup>[21]</sup> Chikungunya patients in India were studied in a randomised controlled trial. HCQ was shown to be no better than an anti-inflammatory analgesic. Because of its immunomodulatory and antiviral properties, HCQ is currently being explored as a possibility for COVID-19 treatment. However, the evidence for using HCQ and CQ for COVID-19 appears to be limited and equivocal.<sup>[22]</sup> According to genome expression and biochemical correlates of prakruti, Vata prakruti persons have a distinct downregulation of genes associated in responding to environmental stimuli and reaction to inflammation. Furthermore, the anti-inflammatory cholinergic pathway, which is a function of the efferent vagus nerve, is crucial in regulating systemic and local inflammation, making neuronal immunomodulation possible.<sup>[23]</sup> Herbs contain immune-stimulating and inflammation-modulating characteristics, which can help prevent life-threatening illnesses when used to treat viral respiratory disease. The holistic approach of Ayurveda emphasises illness prevention through lifestyle modifications, dietary management, immune-boosting measures, and symptom treatment with herbal medicines. Antiviral properties have been demonstrated in medicinal plants such as Aegle marmelos, *Andrographis paniculata*, *Acacia nilotica*, *Ocimum tenuiflorum*, *Piper nigrum*, *Solanum nigrum*, and *Terminalia chebula*.<sup>[24]</sup>

### Ayurveda and inflammation

Natural products are gaining popularity due to their broad therapeutic range and powerful anti-inflammatory and antioxidant capabilities.<sup>[25]</sup> One of mankind's first forms of medicine was a decoction (Kadha) made

from a blend of spices and dry plants. Kadha is made using spices and herbs that are either dry or less wet. During the COVID-19 outbreak, India's Ministry of AYUSH (Ayurvedic, Yoga and Naturopathy, Unani, Siddha, and Homeopathy) advised using Kadha to strengthen immunity and minimise inflammation (The ministry of AYUSH, 2020).<sup>[26]</sup> For treatment of COVID-19, drugs with immunomodulatory properties have been proposed. Immunomodulation is a property of several Ayurvedic Bhasma medicines. Swarna Bhasma possesses immunostimulant properties and enhances phagocytic activity in macrophages.<sup>[26]</sup> Swarna Bhasma can be utilised to enhance immunological responses, according to experimental research. T-cell-mediated immune response modulation is seen in Yashada Bhasma.<sup>[27]</sup> *Withania somnifera* (L.) Dunal (Ashwagandha/WS) is one of the most commonly recommended botanicals in Ayurvedic medicine because to its multimodal effects. Immunomodulatory, anti-inflammatory, antioxidant, anti-stress, antihypertensive, and antidiabetic properties, as well as organ-protective benefits, have all been examined. The anti-inflammatory and anti-infectious benefits of WS in maintaining immunological homeostasis in inflammatory and infectious illnesses are supported by scientific research.<sup>[28]</sup> Anti-inflammatory medications, such as steroids and IL-6 receptor antagonists, as well as anti-inflammatory interleukins (IL-10) have been recognised in modern medicine as effective in reducing cytokine storm, which is thought to be a key contributor to COVID-19 patient troubles and mortality.<sup>[29]</sup> Anti-inflammatory interleukins, IL-6 receptor antagonist (Tocilizumab), and IL 10 are only a few of the drugs that have been recommended in modern medicine to help reduce COVID-19 incidence and fatality. The anti-atherosclerotic, anti-coagulative, and anti-platelet action of cinnamon bark should be investigated to help COVID-19 patients avoid inflammatory and thrombotic difficulties. Sunthi, which inhibits pro-inflammatory cytokines, and Marich, which can reduce inflammatory cell creation while maintaining a controlled cytokine production balance, could be utilised to assist COVID-19 patients avoid cytokine storm.<sup>[30]</sup> as mentioned in [Figure 1].

### Ayurvedic standpoint of clinical manifestation

COVID-19 has a *vatakaprapradhana sannipata* appearance and can be graded as *agantukajvara*. The most frequent generalised symptoms are *jvarah*, *trsnah*, *balabramsah*, and *tandrah* followed by the respiratory symptoms such as *kasha*, *svasah*, *kanthah* and *sukairivavrtah*. SARS-CoV-2 has a two-week incubation period. Symptoms appear 4–5 days after infection, and the majority of people fall unwell by 11–12 days. It can be postponed up to 24 days in certain circumstances. According to the Centers for Disease Control and Prevention in the United States, COVID-19 symptoms vary a lot. Fever, cough (59–82%), fatigue (44–77%), appetite (40–84%), breathlessness (31–40%), sputum production (28–33%), and myalgias (11–35%) are all signs of full-blown disease.<sup>[31]</sup> Fever, sore throat, and dry cough are regarded to be the disease's cardinal

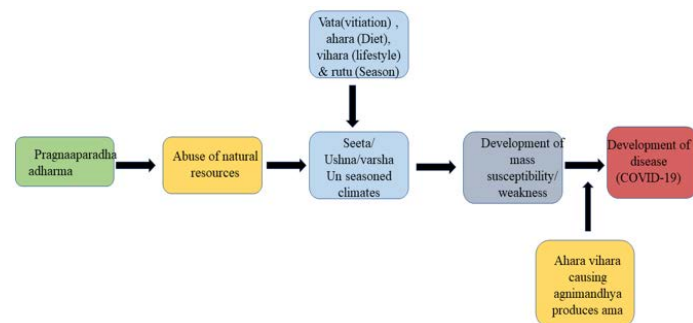


Figure 1: Clinical manifestation of Ayurveda medicine.

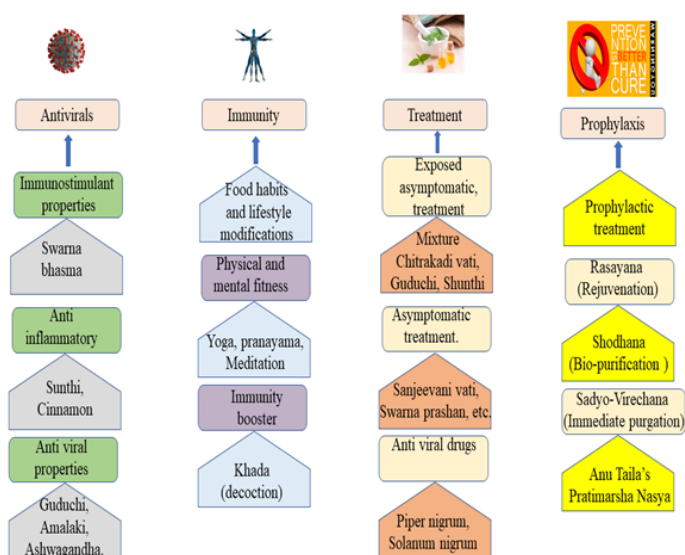
symptoms. The CDC adds chills, headaches, and a loss of taste to the list. Atypical symptoms such as diarrhoea and hemoptysis have been reported in COVID-19 individuals, according to studies. However, they are only found in around 10% of instances. Skin eruptions, on the other hand, are seen in roughly the same number of instances. This illness has a poor prognosis in those over 60 who have concurrent disorders such as hypertension, diabetic, cardiac disease, respiratory illness, and cancer.<sup>[32]</sup> Each person's immune homeostasis is different. Genetics, sexuality, dietary intake, aging, gut health, nutrition, physical fitness, alcohol abuse and other addiction, pregnancies, and other variables all have a part in a person's cross-sectional immune state. As a result, customised therapy is critical for establishing improved host homeostasis in all immune system diseases that affect people, whether infectious or not.<sup>[23]</sup> Agantu (exogenous) Jwara is the primary aetiology, and it causes Rasavaha Srotas symptoms including tastelessness, headaches, vomiting, and body pains. The indications of Pranavaha and Raktavaha Srotas follow. Since there has been a severe loss of Bala, Udana Dushti has become evident, as shown by a deterioration of immunological response and speech-related difficulties in a few persons. Coagulopathies and extremities discolorations are also signs of Raktavaha Srotodusthti. Because 'When the word 'prana' (vitality or oxygen in this case) comes before the word 'Rakta,' catastrophic repercussions are possible (blood). In Ayurveda, the embryological point Fuffusa (lungs) is totally made up of Rakta.<sup>[33]</sup> Prior to the start of respiratory symptoms, people have reported losing their sense of smell (anosmia) or taste (ageusia) Atypical symptoms, including such as fatigue, reduced awareness, limited movement, dysentery, poor appetite, dementia, and the absence of fever, might occur in elderly people and immunocompromised patients. COVID-19 signs may be confused with breathlessness, illness, gastric (GI) symptoms, or exhaustion caused by physiologic changes in pregnant ladies, unfavourable pregnancy occurrences, or other diseases such as malaria.<sup>[34]</sup> In Ayurveda, it is stated that illnesses are many and that there is no way to categorise them all. The reason for this is because the same vitiated dosha creates different diseases depending on the aetiology and location. The recently found COVID-19 can be classed as an agantuja vyadhi (exogenous illness) at first, induced by bhoota (organisms), before converting to nija (endogenous) and causing imbalance of the kapha, vata, and pitta doshas, according to several classical and current viewpoints. The aetiology, signs/symptoms, and treatment regimen for agantuja jwara are all well-explained in Acharya Charaka's treatise.<sup>[35]</sup> (Chikitsa sthana, 3:4) Charaka samhita Jwara, according to Acharya Charaka, is "something that causes damage to Deha (Body), Indriya (Sense organs), manas (Mental faculty)", "that which illness generates additional discomfort among all diseases and that which takes a huge amount of Bali, is termed as jwara and "that which is described by Acharyas originally owing to its significance in its destructive capacity." He highlighted Aagantuja jwara, which is produced by external/foreign substances or germs, when discussing several forms of Jwaras.<sup>[36]</sup> Guduchyadi kwatham is a well-known Ayurvedic composition that is used by Ayurvedic doctors all across India to treat influenza and viral illnesses. In traditional Ayurvedic literature, it is used to treat Pitta and Kapha exacerbated illnesses, as well as Jwaram (fever) and gastrointestinal disorders. The components' indications and pharmacological activity in respiratory illnesses and Rakta (Blood) vitiated conditions point to their usage in viral infections that primarily affect the respiratory system.<sup>[37]</sup> Modified food, lifestyle modifications, and medication were used as part of the treatment plan. The meal recommended was digestible (laghu), fanned the digestion fire (Agni deepanam), nourished the patient, and did not aggravate the vata and kapha doshas. Patients were instructed to eat prepared and filtered par-boiled rice, green gram lentil (Moong Dal), and cooked vegetables with peppers, cumin, and coriander, remain up until 10:00 p.m., and avoid napping all through the day. Bathing was





**Table 1: Patients information and medicines used during COVID-19.**

Sl. No	Demographic details	Chief complaints	Drugs used	Out come	Reference
01	37 years, Female.	Fever, body ache, and head ache from five- six days.	Ayush kwath [four parts of ocimum sanctum leaves, two parts of zingiber officinale rhizome, Cinnamomum zeylanicum and one part of pipernigrum.] Samshamani vati, Lakshmi vilas rasa, Mahasudarshana ghana vati, Dashmularishta was prescribed. Chyawanprasha avaleha two times a day before food	Relief from day 07. Complete regression from symptoms on day 10. Tested negative for RT-PCR on day 13.	07
02	55 years, Male.	Fever, weakness, loss of taste and mild constipation for one week.	Ayush -64 tablet, Guduchyadi kwatha, with Samshamani vati, Triphala churna. Suteshekara rasa before food from day -05	Complete regression of symptoms from da -07. Tested negative for RT-PCR on day 13.	07
03	55 years, Male	Fever from 10 days Body aches, dry cough and obstruction in throat.	Giloy Ghanvati, Ashwagandha vati, Pathyadi Kwath (pravahi) and Diabecon. Yoga protocol, including Sukshma Vyayama, Asanas, Shavasana, Pranayama, breathing exercises and Dhyana.	Symptoms were reduced to 20% by day -10 Tested negative for RT-PCR by day-21	08
04	26 years, Female	Mild fever, body aches, headaches, loss of taste, smell, anorexia, nose block, acute breathlessness, chills and extreme fatigue.	Sadanganianiyam with guduci, saddharnacurna, sukshmatrithala, kanakasavam, indukantam kasham	Symptoms was reduced by day-11 Patient was tested negative for RT-PCR by Day-16	09
05	30 years, Male	Fever, headaches, body ache and fatigue. Partial loss of smell and taste from two days.	Laxmivilasa rasa. Ayush kwatha, Sanshamani vati and Samshamana therapy	Was treated by using the ayurvedic therapy with in six days.	10
06	56 years, Male	Severe upper back pain, malaise, mild fever, loss taste and smell and loss of appetite.	Giloy and Ashwagandha [500 mg tablet/OD] Sanjeevani Bati-125 mg /OD Dietary changes and adequate sleep	Symptoms were reduced by day-07 Patient was tested negative for RT-PCR by Day-14	11
07	56 years, Male	Fever, bilateral earache, dry cough, chest pain, and myalgia from two days. Tested positive for SARS-CoV-2 RT-PCR	Pathyadi kwatha [20 ml before food] Lakshmvilasa rasa (125 mg)-BD Shadanga thoya, Nagaradi kwatha (30 ml)-BD Sudarshana ghana vati 250 mg-BD Vyoshadivati and Nishamalaki kwatha at bed time. Vasa swarasa -15 ml, Guduchi swarasa 10 ml and Kantakari churna-5g and a pinch of Saindhava -BD	Relief from all the symptoms by day-08 Patient was tested negative for RT-PCR by Day-11	12
08	27 years, Female	Mild fever, fatigue, heaviness of head, and mild cold from last seven days and was tested positive for SARS-CoV-2 RT-PCR.	Nagaradi kwatha 40 ml Sudarshana ghana vati 250 mg -BD Kumaryasava 15 ml with lukewarm water. Talisadi churna 5g with honey. Vasa swarasa -15 ml, Guduchi swarasa 10 ml and Kantakari churna-5g and a pinch of Saindhava -BD	Relief from all the symptoms and Patient was tested negative for rapid antigen test on day -14	12
09	32 years, Male	Fever, dry cough, tastelessness, breathing difficulty from past five days. Patients was tested for positive for SARS-CoV-2 RT-PCR.	Gojihvadi kwatha -40 ml and Sudarshana ghana vati -250 mg- BD Dasamularishta-20 ml. Agasthya rasayana-10 g Haridrakhanda -5 g Vasa swarasa-15 ml, Guduchi swarasa-10 ml, Kantakari churna-5g- BD	Relief from all the symptoms and Patient was tested negative for rapid antigen test on day -12	12



**Figure 2:** Various properties of Ayurveda medicine and its effect on COVID-19.

it may be critical in high-risk populations and persons who have been isolated.<sup>[62]</sup>

## DISCUSSION

The immune system is defined in the classic Ayurvedic literature Charaka Samhita as the body's ability to prevent and stop sickness transmission in order to preserve equilibrium. Herbal products can stimulate immunity via regulating immunomodulating mechanisms. Antiviral drugs inhibit virus adherence to human cell receptors by inhibiting viral RNA formation by impacting on the virus's genetic material, reducing virus replication by acting on the virus's essential enzymes. Natural products are becoming more popular as a result of their wide therapeutic range and potent anti-inflammatory and antioxidant properties. Drugs with immunomodulatory capabilities have been recommended for COVID-19 therapy. Several Ayurvedic Bhasma remedies have the ability to modulate the immune system. Swarna Bhasma contains immune-stimulant effects and boosts macrophage phagocytic activity. Medicinal water, gargling, oil pulling, and nasal oil application are all Ayurvedic preventative treatments that may be done at home to produce a "physiological mask," lowering the chance of infecting with the SARS-CoV-2 virus. The traditional Ayurveda text Charaka Samhita, discusses on pandemic management as well as describes body's immune system as the capacity for avoiding and stopping the spread of disease for maintaining homeostasis. This article gives a comprehensive look into COVID-19 management from an ayurvedic viewpoint, shedding fresh light on ancient parts of medicine that may be used to combat modern-day illnesses and assist prevent and contain current and future pandemics.

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## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

## ABBREVIATIONS

**HIV:** Human immunodeficiency virus; **HSV:** Herpes simplex virus; **SARS- CoV 2:** severe acute respiratory syndrome coronavirus 2; **RNA:** Ribonucleic acid; **HCQ:** Hydroxychloroquine; **CQ:** Chloroquine; **CDC:** Centre for Disease control and prevention; **AYUSH:** Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy; **IL-6:** Interleukin 6; **IL-10:** Interleukin 10; **OD:** Once daily; **BD:** Twice a day; **RT-PCR:** Reverse transcription Polymerase chain reaction.

## Author contribution

V Udaya Kumar, Sameer Dhingra, Nithesh Kumar, Krishna Murti is responsible for conceptualization and design, Sarasa Meenakshi, V Udaya Kumar, Reny Sara Raju is responsible for Acquisition of data, Sarasa Meenakshi, v udaya kumar wrote the first draft of manuscript and pictorial representations. Sameer dhingra, Nithesh Kumar, Krishna murti, Dr. V Ravichandiran are responsible for the editing, and final content. All the authors read and approved the manuscript.

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## Ethical Statement

This is a Narrative review, and does not include any human/ animal subject. Hence no ethical approval is required.

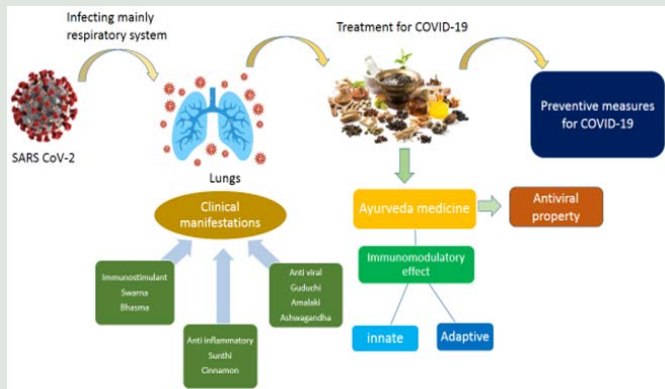
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## GRAPHICAL ABSTRACT



## SUMMARY

The SARS-CoV-2 virus has resulted in substantial devastation of livelihoods, and unparalleled financial catastrophe throughout the world. In the early stages of the pandemic, the Government of India (GOI) approved the use of an Ayurvedic medicine and herbal products to boost immunity against COVID-19. The traditional medicine Ayurveda is being explored in India for the prevention and treatment of COVID-19. Rasayana, an Ayurvedic concept linked to immunomodulation, plays an important role in COVID-19 management. The traditionally used herbs are considered safer and cost-effective than their synthetic counterparts. The Ministry of AYUSH, Government of India, issued a public advisory outlining Ayurveda-based COVID-19 prevention measures, which was widely promoted and access. The immune systems, both innate and acquired, have been found to be modulated by a variety of herbal medicines. Rasayana is beneficial in improving immune protection and is required during the COVID-19 degenerative phase of the immune system, and is high in glycosides, flavanoids, coumarins, and thiosulfates, all of which have effective immunomodulation properties. Natural plant products modification improves the host's immune response to viruses, alleviating symptoms and lowering viral infection-related mortality. Some metabolites inhibit virus replication without affecting the host's metabolism, making them ideal candidates for the development of safe and effective antiviral drugs. Given the global burden of diseases caused by viruses, the development of safe and effective antiviral drugs is critical. Ashwagandha, Mulethi, Amla, Neem, Tulsi, Turmeric, Ginger, Garlic, Onion, Dryfruits, and other herbs and spices Phytochemicals found in ashwagandha, giloy, and tulsi have the capacity to combat any infection. Investigate incorporating Ayurvedic rejuvenate herbs as teas or tonics into your diet. The main goal of this article is to improve the reach and penetration of Ayurvedic medicine, treatment, and rehabilitation strategies for the COVID-19 pandemic

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