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 essence 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.[1] 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 rigorous animal and clinical studies.[2] Ayurvedic medicine showed efficient effect in treating various diseases such as Cancer,[3] interstitial lung disease,[4] 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.[5] Infectious diseases like malaria,[6] 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.[7] It also decelerates the disease progression, improves quality of life in HIV infected individuals.[8] A potential antiviral activity is shown by few plant extracts against HSV-2 virus.[9] 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.[10] 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
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 one of three types sahaja bala [Innate], khala bala [temporal], yuktirkita bala [Aquired][10-12] Vyadhikshamatva refers to a resistance against deterioration of integrity, composition, proportion, and inter-linkage of individual entity's dhatu (tissues) and doshas (bioenergies).[13] 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.[13] 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.[14] 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.[15] Pandemic is discussed in Ayurveda in the Charaka Samhita Viman Shana under Janapododhwansi 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, Aharavidi, Rasayana Chikitsa, Vyayama, Yoga, and Pranayama are some of the Ayurvedic regimens. All of these are quite beneficial in boosting immunity.[16] As a COVID-19 prevention method, AUSY 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.[17] 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.[18] Rasayana drugs (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.[19] 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.[18] Rasayana is an Ayurvedic specialty 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.[14] 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.[21] 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.[22] 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.[23] 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.[24]

Ayurveda and inflammation

Natural products are gaining popularity due to their broad therapeutic range and powerful anti-inflammatory and antioxidant capabilities.[25] 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). 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. Swarna Bhasma can be utilised to enhance immunological responses, according to experimental research. T-cell-mediated immune response modulation is seen in Yashada Bhasma. Withania somnifera (L.) Dunal (Ashwagandha/WS) is one of the most commonly recommended botanicals in Ayurvedic medicine because of its multimodal effects. Immunomodulatory, anti-inflammatory, antioxidant, anti-stress, antihypertensive, and anti-diabetic 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. 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. 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 mortality. 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. Suniti, 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.

Ayurvedic standpoint of clinical manifestation

COVID-19 has a vatakaphapradhana sannipata appearance and can be graded as agantu kajwara. The most frequent generalised symptoms are jwarah, trsna, balabramsa, and tandra followed by the respiratory symptoms such as kasha, svasaah, 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. Fever, sore throat, and dry cough are regarded to be the disease’s cardinal symptoms. The CDC adds chills, headaches, and a loss of taste to the list. Atypical symptoms such as diarrhea and hemoysis 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. 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. 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 Dushhti 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 Srotodushhti. 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. 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. 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 agantu 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 aagantu jwara are all well-explained in Acharya Charaka’s treatise.

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. 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 grame 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...
 avoided if the patient had a fever. COVID-19 Chikitsa Sthana (Chikitsa Sthana) is a Hindu Based on their comorbidities, ayurvedic medicines were prescribed.\[36\]

**Ayurvedic treatment plan for COVID-19**

Given that COVID-19 necessitates a structured approach that includes preventive care, early-stage disease management, and hospital care for moderately and critically ill patients, the AYUSH sector's capacity must be fully utilised to ensure the best possible use of the country's limited health-care resources. Traditional medicine has also been proposed for inclusion in the World Health Organization's COVID-19 strategic readiness and response strategy.\[31\] COVID-19 is thought to be a self-limiting illness, with Ayurveda therapies reserved for asymptomatic, mild, or moderate cases. Patients with comorbidities are directed to allopathic hospitals, even if formal Ayurveda COVID medical clinics are established. COVID-19 is treated with a stand-alone Ayurvedic therapy. We treated a large number of patients with varied comorbidities.\[39\]

Sanjivani vati; Hinguleswara ras; Tribhuvana kirti ras; Mrutyunjaya ras; Anandabhaiva ras; Trailokyachintamaniras are all essential vatsanabha preparations.

**Drug Contraindication**

Vatsanabha medicines are often contraindicated.

a. children under the age of 12; b. people over the age of 75; c. women who are pregnant.

D. Emaciated/Malnourished e. Pitta Pradhana f. Left Ventricular Dysfunction

If these persons are to be treated, it should be done with utmost caution, at the lowest dose feasible, and for as little time as possible.\[40\] as mentioned in [Table 1]

- For unexposed asymptomatic patients these ayurvedic medicines like Sanjeevani vati, Swarna prshan, garlic (Allium sativum) peel, turmeric (Curcuma longa) powder, Carom or Ajwain (Trachyspermum ammi) seeds, and Loban (resin of Styrax benzoin and Boswellia species) may also be beneficial.

- For exposed asymptomatic individuals - This category comprises those who have no visible symptoms but are at risk because of a previous contact. They must be maintained in a safe place. Guduchi (Tinospora cordifolia), Shunthi (Zingiber officinale), and Haridra (Zingiber officinale) and Haridra (Zingiber officinale) and Haridra (Zingiber officinale) and Haridra (Zingiber officinale) and Haridra (Zingiber officinale) and Har (Curcuma longa). Some of the ayurvedic herbs that may be used as a decoction remedies include Tinospora cordifolia, Zingiber officinale, Curcuma longa, Ocimum sanctum, Glycyrrhiza glabra, Adhatoda vasica, Andrographis paniculata, Swertia chirata, Moringa oleifera, Triphala, and Tricit.\[41\]

Citri Reticulatae Pericarpium controls Qi, nourishes the spleen, and dries moisture to resolve phlegm, whilst Glycyrrhiza Radix et Rhizoma tonifies Qi and increases Citri Reticulatae Pericarpium's role in resolving phlegm and decreasing cough in traditional medicine.\[42\] Manasaroga vignana is a clinical situation in which the sickness and its treatment are based on Ayurveda's fundamental principles, such as the theory of Tridosha, Panchabhoota, and so on. Bhoota Vidyav is a psychiatric problems.\[43\]

Indukantham Kwatham is a various herbal tablet made from different components of medicinal plants such as Holoptelea integrifolia, Cedrus deodara, Gmelina arborea, Aegle marmelos, Stereospermum colais, Oroxylum indicum, Premna corymbosa, Desmodium gangeticum, Pseudarthria viscida, Solanum anguivi, Solanum virgin.\[44\] Coumarins have been shown to have antiviral, anticoagulant, antibacterial, antifungal, anti-protozoal, insecticidal, fungicide, anti-mycobacterial, anti-mutagenic, anti-amnesic, and anti-inflammatory properties.\[24\]

**Ayurvedic Prophylactic treatment of COVID-19**

The classic Ayurvedic literature Charaka Samhita covers pandemic management and characterises the body's immune system as the ability to avoid and halt the spread of sickness in order to preserve equilibrium. Ayurveda largely focuses on developing mental and physical fortitude to deal with a variety of conditions, notably disease. Immunity (Bala or strength) in Ayurveda is divided into three categories: inherent (Sahaja), chronobiologic (Kalaja), and obtained, which correlate to inborn and acquired immunity (Yuktikrut).\[45\] Immunomodulators (known as Rasayana), systemic and local treatments are among the many medicines available in Ayurveda for strengthening immunity against respiratory infections.\[46\] Besides social isolation, washing hands, and wearing a mask, modern medical science wouldn't provide strategies to strengthening immunity or even lower the risk of disease. Medicinal water, gargling, oil pulling, and nose oil application are all Ayurvedic preventative treatments that may be done at home to create a "physiological mask," reducing the likelihood of acquiring this condition. Topical therapies may mitigate the chances of disease by functionalizing biofilm over the most prevalent infection site, the oral and oropharyngeal mucosa. Immunomodulator (Rasayana) phytochemicals including Withania somnifera, Tinospora cordifolia, Piper longum, and Glycyrrhiza glabra can increase innate immunity and become an excellent COVID-19 prophylactic strategy\[14\] as mentioned in [Figure 2].

**Prophylaxis Prior Exposure**

So as to help boost that initial line of defence, such as the nasal mucosa, hairs, and cilia, Anu Taila's Pratimarsha Nasya (Nasal application by infusing two drops inside each nostril once in the morning) can be used.\[47-49\] Ayurvedic measures tailored to epidemics, for example Shodhana (Bio-purification therapy) to alleviate aggregated Dosha (previously disturbed homeostasis), Rasayana (Rejuvenation therapy) to achieve optimum level of various functional elements of the body, Sadvritta (Nobel moral conducts), and Achara Rasayana (Good rejuvenating conducts),\[46\] to boost psychological aspects may be used.\[47\] Sadyo-Snehana (Instant oleation of the body with 50 - 100 mL of plain Ghee together with Yavagu (Rice-gruel) in the dinner or whenever you feel hungry, backed by Sadyo-Virechana (Immediate purgation) with to 10 to 15 g of Avipatti Yoga with warm water, empty stomach as in early hours must be used for Shodhana. Rasayana can be used by taking 10 to 20 g of Chyavanprasha 58 with hot milk on an empty belly in the morning.\[49\] Graha Roga Ayurvedic Measures (Infectious diseases) Dhupana (Fumigation) using Krimighna and Rakshoghna (Herbal anti-microbial) medications, such as onion & garlic tunics, mustard seeds, Neem leaves and Ghee, and so on, may well be utilised to cleanse the surroundings.\[50\] The goal is always to properly equip body of host to fight whenever the body comes into contact with virus.

**Prophylaxis Following Exposure**

Shadangapaniya ( lukewarm medicinal water that contains 30 g of Shadangapaniya powder to two litres of water and boiled that to 50%) consumption all through the day may indeed be useful. Usage of a few of the most extensively practised and reviewed Rasayana drugs with defined immunoregulatory actions, such as Guduchi (Tinospora cordifolia),\[51,52\] Ardraka (Zingiber officinale),\[53,54\] Amalaki (Emblica officinalis or Phyllanthus emblica),\[55-56\] Haridra (Curcuma longa),\[57-58\] Tulasi (Ocimum sanctum) Ashwagandha (Withania somnifera),\[59-60\] and Madhyashishi (Glycyrrhiza glabra):\[60-61\] as a preventative strategy, Pharmacognosy Research, Vol 14, Issue 3, Jul-Sep, 2022
<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Demographic details</th>
<th>Chief complaints</th>
<th>Drugs used</th>
<th>Out come</th>
<th>Reference</th>
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<tbody>
<tr>
<td>01</td>
<td>37 years, Female</td>
<td>Fever, body ache, and head ache from five- six days.</td>
<td>Ayush kwath [four parts of ocimum sanctum leaves, two parts of zingiber officinalis rhizome, Cinnamomum zeylanicum and one part of pipernigrum.] Samshaman vati, Lakshmi vilas rasa, Mahasudarshana ghana vati, Dashmularishta was prescribed. Chyawanprasha avaleha two times a day before food</td>
<td>Relief from day 07. Complete regression from symptoms on day 10. Tested negative for RT-PCR on day 13.</td>
<td>07</td>
</tr>
<tr>
<td>02</td>
<td>55 years, Male</td>
<td>Fever, weakness, loss of taste and mild constipation for one week.</td>
<td>Ayush -64 tablet, Guduchyadhi kwatha, with Samshaman vati, Triphala churna. Suteshekara rasa before food from day -05</td>
<td>Complete regression of symptoms from da -07. Tested negative for RT-PCR on day 13.</td>
<td>07</td>
</tr>
<tr>
<td>03</td>
<td>55 years, Male</td>
<td>Fever from 10 days Body aches, dry cough and obstruction in throat.</td>
<td>Giloy Ghanvati, Ashwagandha vati, Pathyadi Kwath (pravahi) and Diabecon. Yoga protocol, including Sukhma Vayama, Asanas, Shasavasana, Pranayama, breathing exercises and Dhyana.</td>
<td>Symptoms were reduced to 20% by day -10 Tested negative for RT-PCR by day-21</td>
<td>08</td>
</tr>
<tr>
<td>04</td>
<td>26 years, Female</td>
<td>Mild fever, body aches, headaches, loss of taste, smell, anorexia, nose block, acute breathlessness, chills and extreme fatigue.</td>
<td>Sadangapaniyan with guduci, saddharnacurna, sukshmatirphala, kanakasavam, induktam kasham</td>
<td>Symptoms was reduced by day-11 Patient was tested negative for RT-PCR by Day-16</td>
<td>09</td>
</tr>
<tr>
<td>05</td>
<td>30 years, Male</td>
<td>Fever, headaches, body ache and fatigue. Partial loss of smell and taste from two days.</td>
<td>Laxmivilasa rasa. Ayush kwatha, Sanshamani vati and Samshaman therapy</td>
<td>Was treated by using the ayurvedic therapy with in six days.</td>
<td>10</td>
</tr>
<tr>
<td>06</td>
<td>56 years, Male</td>
<td>Severe upper back pain, malaise, mild fever, loss taste and smell and loss of appetite.</td>
<td>Giloy and Ashwagandha [500 mg tablet/OD] Sanjeevani Bati-125 mg /OD Dietary changes and adequate sleep</td>
<td>Symptoms were reduced by day-07 Patient was tested negative for RT-PCR by Day-14 Relief from all the symptoms by day-08 Patient was tested negative for RT-PCR by Day-11</td>
<td>11</td>
</tr>
<tr>
<td>07</td>
<td>56 years, Male</td>
<td>Fever, bilateral earache, dry cough, chest pain, and myalgia from two days. Tested positive for SARS-CoV-2 RT-PCR</td>
<td>Pathyadi kwatha [20 ml before food] Lakshmivilasa 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 swarasas -15 ml, Guduchi swarasas 10 ml and Kantakari churna-5g and a pinch of Saindhava -BD</td>
<td>Relief from all the symptoms and Patient was tested negative for rapid antigen test on day -12</td>
<td>12</td>
</tr>
<tr>
<td>08</td>
<td>27 years, Female</td>
<td>Mild fever, fatigue, heaviness of head, and mild cold from last seven days and was tested positive for SARS-CoV-2 RT-PCR.</td>
<td>Nagaradi kwatha 40 ml Sudarshana ghana vati 250 mg -BD Kumaryasava 15 ml with lukewarm water. Talisadi churna 5g with honey. Vasa swarasas -15 ml, Guduchi swarasas 10 ml and Kantakari churna-5g and a pinch of Saindhava -BD</td>
<td>Relief from all the symptoms and Patient was tested negative for rapid antigen test on day -14</td>
<td>12</td>
</tr>
<tr>
<td>09</td>
<td>32 years, Male</td>
<td>Fever, dry cough, tastelessness, breathing difficulty from past five days. Patients was tested for positive for SARS-CoV-2 RT-PCR.</td>
<td>Gojihvadi kwatha -40 ml and Sudarshana ghana vati -250 mg- BD Dasamularishta-20 ml. Agasthya rasayana-10 g Haridrakhanda -5 g Vasa swarasas-15 ml, Guduchi swarasas-10 ml, Kantakari churna-5g- BD</td>
<td>Relief from all the symptoms and Patient was tested negative for rapid antigen test on day -12</td>
<td>12</td>
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it may be critical in high-risk populations and persons who have been isolated.[62]

**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 new light on ancient parts of medicine that may be used to combat COVID-19. This article gives a comprehensive look into COVID-19 management from an Ayurvedic viewpoint, shedding new light on ancient parts of medicine that may be used to combat COVID-19.

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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, Sarasra Meenakshi, V Udaya Kumar, Renu Sara Raju is responsible for Acquisition of data, Sarasra Meenakshi, v udaya kumar wrote the first draft of manuscript and pictorial representations. Sameer dhingra, Nithesh Kumar, Krishna murti, Dr. V Ravichandran 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 thiosulfinates, 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.