



## ROLE OF AYURVEDA IN PREVENTION OF COVID 19

Dr. Vijay Vaishnav<sup>1\*</sup>, Dr. Jitendra Kumar Sharma<sup>2</sup>, Dr. Purushottam Das Sharma<sup>3</sup>,  
Dr. Dinesh Kumar Sharma<sup>4</sup> and Dr. Deepa<sup>5</sup>

<sup>1</sup>P.G. Scholar, P.G. Department of Rachana Sharira, M.M.M. Government Ayurveda College, Udaipur, Rajasthan.

<sup>2</sup>Professor & H.O.D., P.G. Department of Rachana Sharira, M.M.M. Government Ayurveda College, Udaipur, Rajasthan.

<sup>3</sup>Associate Professor & P.G. Department of Rachana Sharira, M.M.M. Government Ayurveda College, Udaipur, Rajasthan.

<sup>4,5</sup>Lecturer, P.G. Department of Rachana Sharira, M.M.M. Government Ayurveda College, Udaipur, Rajasthan.

\*Corresponding Author: Dr. Vijay Vaishnav

P.G. Scholar, P.G. Department of Rachana Sharira, M.M.M. Government Ayurveda College, Udaipur, Rajasthan.

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### ABSTRACT

World community is facing an unprecedented pandemic of novel corona virus disease (COVID-19) caused by Severe Acute Respiratory Syndrome Corona virus 2 (SARS-CoV-2). The disease has spread globally with more than 18.5 Cr confirmed cases and 40 Lakh deaths as of 8 July 2021. Despite worldwide efforts to contain it, the pandemic is continuing to spread for want of a clinically-proven prophylaxis and therapeutic strategy. The dimensions of pandemic require an urgent harnessing of all knowledge systems available globally. Utilization of Traditional Chinese Medicine in Wuhan to treat COVID-19 cases sets the example demonstrating that traditional health care can contribute to treatment of these patients successfully. Drawing on the Ayurveda classics, contemporary scientific studies, and experiential knowledge on similar clinical settings, here we propose a pragmatic plan for intervention in India. We provide a plan for graded response, depending on the stage of infection among individuals, in a population. Notwithstanding the fact that no system of medicine has any evidence-based treatment for COVID-19 as yet, clinical interventions are required to be put in place. Therefore, pragmatic strategy proposed here for Ayurveda system of medicine requires immediate implementation. It will facilitate learning, generate evidence and shall be a way forward.

**KEYWORDS:** Ayurveda, COVID-19, Pandemic, SARS-CoV-2, Traditional Medicine, TCM

### INTRODUCTION

In *Ayurvedic* literature, the communicable diseases are mentioned under *Janapadoddhvamsa* (communicable diseases affecting an entire country or the whole world) impairment of *Vayu* (air), *Udaka* (water), *Desha* (land) and *Kala* (season) and are more lethal in their consecutively increasing order. *Adharma* (unrighteousness) is the root cause of vitiation of all factors and is led by *Pragyapradha* (intellectual error). *Sansargaja* (diseases transmitted directly through close contact or droplet infection) and *Upsragaja* (diseases transmitted indirectly through contaminated surfaces), are also mentioned in *Ayurveda*. *Ayurvedic* management of these infectious diseases can be preventive and curative. Changes in weather and environment can be predicted with geological and climatology advanced technologies. Adequate arrangements and planning can be made before starting epidemics, which are most likely to occur in that specific weather, to minimize the

morbidity and quick identification of various vectors that could worsen the impact or facilitate the spread of infections. In newly emerging COVID-19, where there is limited scientific knowledge, a vigilant observation can help prepare plan and management in future outbreaks. Further, early detection may help for rapid implementation of effective measures, which are the key to reduce the risk of disastrous spread.<sup>[1]</sup>

### MATERIAL AND METHOD

1. Study of *Ayurveda* literature as well as modern literature.
2. Reviewing the previous research works, journals, magazines, and internal materials.

### DISCUSSION

The coronavirus disease 19 (COVID-19) pandemic is unique and unprecedented in several aspects and has challenged health care systems. At present, the global

momentum is unabated, and second wave is anticipated.<sup>[1]</sup> The experience and lessons learnt from the earlier severe acute respiratory syndrome (SARS) epidemics appear inadequate and call for better approaches and strategies in public health and medical care. Conventional mainstream medicine is at the forefront when it comes to curbing this menace, especially at the critical care stage. The current prophylactic measures are insufficient, and suggested options such as hydroxychloroquine (HCQ) are still under investigation. The understanding of pathophysiology of COVID-19 is emerging with increasing prevalence over the globe. A wide variation in the patient population ranging from asymptomatic, to mild or moderate cases and severe cases (some showing relapse) is reported. Severe infections of SARS-CoV-2 lead to mortality due to severe acute respiratory syndrome accompanied with hypoxia followed by organ failure.<sup>[2]</sup>

The prophylactic and therapeutic potential of traditional and complementary medicine systems such as Ayurveda and Yoga is not really being considered during this crisis and global hunt for effective preventive and treatment measures. In this commentary, we have attempted to highlight the knowledge and practices from Ayurveda and Yoga that might be effectively utilized in the prophylaxis and adjuvant therapy of COVID-19. Several of our recommendations in this paper are driven by the emerging dynamics of the causative organism SARS coronavirus 2 (SARS-CoV-2) and the unravelling of the pathophysiology of COVID-19. While we focus here on prophylaxis and the protection of vulnerable target organs, Ayurveda and Yoga as an add-on therapy may support patients of COVID-19 by improving the quality of standard care.

To treat these conditions of COVID-19, we need to have drugs that are best prophylactic (pre and post COVID-19), immunomodulatory and adaptogenic in nature along with anti-SARS-CoV-2 action. Here the present study shows that the selected *Rasayana* botanicals may have these all the actions and may be effective for management of COVID-19. In the following sections we discuss in detail how these *Rasayana* and their phytoconstituents can be potential therapeutic adjuvants for the effective management of COVID-19.<sup>[3]</sup>

Research and therapeutic strategies for COVID-19 have focused on agents to attack the virus or immunize against it. This leaves aside the consideration of the host—one of the most important factors in disease dynamics. Ayurveda pays particular attention to the host and recommends measures for a healthy lifestyle rather than the mere prescription of medicine. *Charaka Samhita*, the classic of Ayurveda, describes epidemic management and defines immunity as the ability to prevent disease and arrest its progress to maintain homeostasis. The concept of building strength of mind and body to cope with various stressors, including infection, is a

cornerstone of Ayurveda practice. Similar to innate and acquired immunity, the Ayurveda concept of immunity (*Bala* or strength) is classified as natural (*Sahaja*), chronobiologic (*Kalaja*), and acquired (*Yuktikrut*). The holistic approach of Ayurveda toward promoting health (*Swasthavritta*) includes personalized interventions based on host and environmental factors. The interventions include therapeutic cleansing procedures (known as *Panchakarma*) and certain immunomodulators (known as *Rasayana*). Local and systemic interventions to boost the immune system have been advocated to manage respiratory illnesses. The choice of specific Ayurveda therapeutic agents and practices is based on certain individual genetic characteristics known as *Dosha Prakriti* types (*Vata*, *Pitta*, and *Kapha*).

In our opinion, several general measures described below may be useful to reduce the risk of SARS-COV-2 infection and complement therapeutic management as add-on treatment.

### Local Prophylaxis

The eyes, nose, and mouth are the main portals of entry of droplets carrying the SARS-COV-2. Prior to the final assault in the lungs, the virus gains access to the throat region and stays for some hours. The fatty acid coat of the virus adheres to the moist mucosal layers, which helps it gain entry into the cells by binding to specific cell receptors. Ayurveda classics mention several interventions that are likely to target these entry portals. This may help to improve the innate immunologic response of the mucus membranes and may thus inhibit the virus transmission to the lungs. These measures may hence function as “physiological masks” barricading the viral invasion. The general measures for respiratory illnesses described in *Ayurvedic* texts such as consumption of hot water, hot food, and herbal decoctions, gargling with medicated water, steam inhalation, and local applications may be helpful for symptomatic relief in mild cases.

### Medicated water

Drinking hot or warm water is a popular home remedy for many ailments. Ayurveda also advocates this as a measure for improving digestion of *Ama*, a proinflammatory product of impaired metabolic disorders. The presence of *Ama* is linked to increased susceptibility to infections. Traditionally, warm water is consumed in many parts of India for diverse disorders of fever, inflammation, metabolism, and allergy such as rhinitis and asthma. Several spices that are popularly used in the kitchen are added as single or multiple agents to the boiling water and consumed as medication throughout the day. These spices include dry ginger (*Zingiber officinale*), yashtimadhu (*Glycyrrhiza glabra*), and nut-grass (*Cyperus rotundus*) rhizomes; *Khas* (*Vetiveria zizanioides*) and Indian sarsaparilla (*Hemidesmus indicus*) roots; coriander (*Coriandrum sativum*) and fennel (*Cuminum cyminum*) seeds; and

cinnamon (*Cinnamomum verum*) and catechu (*Acacia catechu*) barks.

### Mouth rinse and gargle

Warm liquids and oils are used as gargles (*Gandusha*) or mouth rinses (*Kavala*) to cleanse the mouth and throat thoroughly. This can also have a systemic effect. The oils or oily decoctions clean the oral cavity, pharynx, and tonsillar area and are likely to coat the mucosa as biofilm and induce additional immunomodulatory, antioxidant, and antimicrobial benefits. The paramount role of host mucosal immunity in controlling infectious agents is well known. Turmeric (*Curcuma longa*) rhizome, *Yashtimadhu* or liquorice (*Glycyrrhiza glabra*) stem, *Neema* (*Azadiracta indica*) and catechu barks (*Acacia arabica*) and natural salt may be used to prepare medicated water/solutions for gargles/mouth rinse. Gargles with these medicated decoctions have demonstrated beneficial effects in xerostomia (dry mouth), postoperative sore throat, oral ulcers, gingivitis, and bacterial growth. Glycyrrhizin, an active component in liquorice was found to be more effective than common antivirals in inhibiting the replication of SARS virus and inhibited its absorption and penetration. Yoga texts recommend cleansing of the nasal passage with salt water (*Jala neti*). The efficacy of salt water in upper respiratory infections has been reported in many randomized controlled trials (RCTs), although more conclusive evidence is needed.

### Nasal oil application

*Ayurveda* recommends the application of medicated oils made from butter oil (*Ghee*) and vegetable oils such as sesame or coconut in the nostrils. This may protect the respiratory tract from pathogen entry. This procedure is known as *Nasya* in *Ayurveda*. Application of pure sesame oil was found to be effective for the treatment of dry nasal mucosa. Similar to gargles and mouth rinses, nasal oil application possibly forms a biofilm and can help as a barrier to the entry of the virus particles. Researchers of Traditional Chinese Medicine have already proposed the use of nasal oil application for preventing SARS-COV-2 infection.

### Steam inhalation

Steam inhalation and hot fomentation (with aromatic oils such as menthol) provide satisfactory clinical relief in nasal and throat congestion, bronchoconstriction, headache, and sinusitis. Its role in improving nasal conditioning, improving nasal mucus velocity, and reducing congestion and inflammation has been reported in several clinical studies.

### Systemic Prophylaxis

*Ayurveda* advocates several non-pharmacological measures that are critical to overall health, including diet, sleep, mental relaxation, lifestyle behavior, and Yoga. Several studies have endorsed the role of *Yoga* breathing techniques (*Pranayama*), postures (*Asana*) and procedures (*Yogic Kriya*) in improving lung health and

exercise tolerance. The recommended daily diet includes fresh hot soups of vegetables (radish, trigonella leaves, drum stick vegetable pods) and pulses (lentils, green gram/mung beans, chickpeas) seasoned with spices such as ginger (*Zingiber officinale*), garlic (*Allium sativum*), cumin seeds (*Cuminum cyminum*), and mustard (*Brassica nigra*) seeds (black whole mustard).

### Rasayana as Immunomodulators

*Rasayana*, a specialty of *Ayurveda* deals with measures for rejuvenation. *Rasayana* therapy comprises lifestyle, diet and medicine that have properties to enhance growth, retard aging, induce tissue regeneration and stimulate immunity. Due to its effects on improving immunity, *Rasayana* therapy may have direct relevance to the prophylaxis and management of SARS-COV-2 infection. The botanicals used in *Rasayana* therapy have been found to be effective in immunomodulation and restoration of immune homeostasis. Shi et. all described the immune response to SARS-COV-2 infection in two phases. The first protective phase of adaptive immune response in the host that may eliminate the virus in a large proportion of subjects. In relatively few cases, the viral infection progresses, causing intense release of pro-inflammatory cytokines (cytokine storm). The cytokine storm results in severe inflammation, leading to lung damage and co-attendant multi-organ failure. Thus, although antivirals are important, a robust and well-contained immune response to maintain immune homeostasis will be critical for good recovery and reduced mortality. This requires a favorable Th1/Th2 cytokine balance.

Several *Rasayana* botanicals described in *Ayurveda* are used in clinical practice for strengthening immunity. Based on our research data, we find *Withania somnifera* (*Ashwagandha*), *Tinospora cordifolia* (*Guduchi*), *Asparagus racemosus* (*Shatavari*), *Phyllanthus embelica* (*Amalaki*), and *Glyceriza glabra* (*Yashtimadhu*) are potential immunomodulators. Such *Rasayana* botanicals may be considered for COVID-19 prophylaxis and as an add-on treatment. Here, we present a few details on *Ashwagandha* as an example. There are several *in vitro*, animal, and clinical studies over the last two decades to demonstrate primarily the immunomodulatory and antioxidant effects of *Ashwagandha*. It is largely used in clinical benefit in inflammation, arthritis, and cancer, but it has been used in several other disorders. The selective Th1 up-regulation by aqueous extract of *Ashwagandha* roots has been shown in a mice model. *Ashwagandha* aqueous extract has a broad-spectrum dose-dependent role in immune homeostasis.

Based on available data, it shows that *Ashwagandha* may be effective in improving host immunity through the modulation of key targets relevant to COVID-19. Studies shows that the clinical effects of *Ashwagandha* containing *Ayurvedic* formulation to be equivalent to HCQ in a RCT for treating rheumatoid arthritis. It

depicts potential mechanisms of action of *Ashwagandha* in prophylaxis (antiviral, immune boosting, vascular integrity) and management (pyrexia, anti-inflammatory, conserving alveoli) related clinical targets of COVID-19.

## CONCLUSION

In medicine, efficacy and effectiveness are two distinct things. Efficacy is how well a medicine does in clinical trials. Effectiveness is how well it does in the real world and ease of use is partly what makes an efficacious medicine effective. It is today safe to say Ayurveda is both efficacious and effective in COVID for the reasons explained above. *Ayurveda* shares many commonalities with the other herbal traditions in the world such as Traditional Chinese Medicine (TCM) and African Herbalism. Plants such as *Mulethi*, *Neema* and *Giloy* are used in all these herbal tradition.

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