

Role of Indian herbs against COVID-19: A Review

Himesh Soni^{1*}, Sarvesh Sharma¹, Jitender K Malik²

¹D.H.S.Bhopal-India

²Smt. Manjira Devi Shikshan and Prashikshan Institute, Hitanu Dhanari, Uttarkashi, India

DOI: [10.36348/sijtcm.2020.v03i09.001](https://doi.org/10.36348/sijtcm.2020.v03i09.001)

| Received: 25.09.2020 | Accepted: 22.10.2020 | Published: 30.10.2020

*Corresponding author: Himesh Soni

Abstract

An eruption of pneumonia in December, 2019 in Wuhan, China, has now been gritty to be caused by a novel corona virus. Severe Acute Respiratory Syndrome Corona-virus (SARS-CoV) named is allotted for this novel threads. The disease has spread more than 185 countries and regions, with more than 2.05 million confirmed cases and more than 1, 34,354 deaths as of April 16, 2020. The pandemic is enduring to spread inspite of worldwide efforts. The SS-RNA virus from the enveloped corona virus family caused SARS (Severe acute respiratory syndrome) which is life threatening viral infection. Ayurveda has "effort towards enhancing the immunity against host of infections. The world has been relying on the Ayurvedic system of medicine from past era. As the field of alternative medicine expands enormous fame in the wake of COVID-19, the antique practice of Ayurveda with India as its land of origin can put on the role of calm yet prevailing armed forces in the fight against the corona virus. The present review spotlight on the various Ayurvedic principle with reference to the herbs as well herbo-mineral aliments which boost our immunity and taken as nutraceutical to prevent against SARS.

Keywords: COVID-19, Herbs, Herbo-mineral, immunity booster & Prevention measures.

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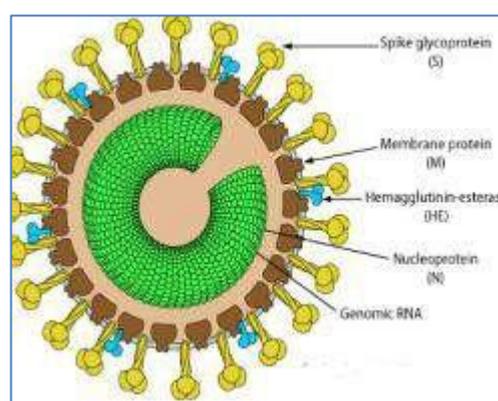
INTRODUCTION

Nature's furry outbreaks across the world in the form of the pandemic, which causes sudden fiasco in the entire aspect of the life. An entire circumstance warns human being for their transformed civilization and daily lifestyle which causes less immunity in their body to fight against this mutated strain (novel corona). Now we to unravel this doctrine .India which is land of one of the oldest and eminent civilization, Here we have to take our step back in pattern of medicine and envisaged our future in light of our civilization in order deal with upcoming panademic. A novel coronavirus (SARS-CoV) virus is the major key outbreak of the new era in many different countries of the world. The repeated peripheral and outbreaks of CoVs point toward a public health hazard. This suggests the hazard of animal-to-human and human-to- human transmission [1].

SARS (Severe Acute Respiratory Syndrome)

Severe acute respiratory syndrome (SARS) which had begun the previous year in Asia and secondary cases somewhere else within the world, the WHO stating this coronavirus notorious by a variety of laboratories was the contributory agent for SARS. The

virus was collectively named the SARS corona virus (SARS-CoV)[2].



SARS-CoV

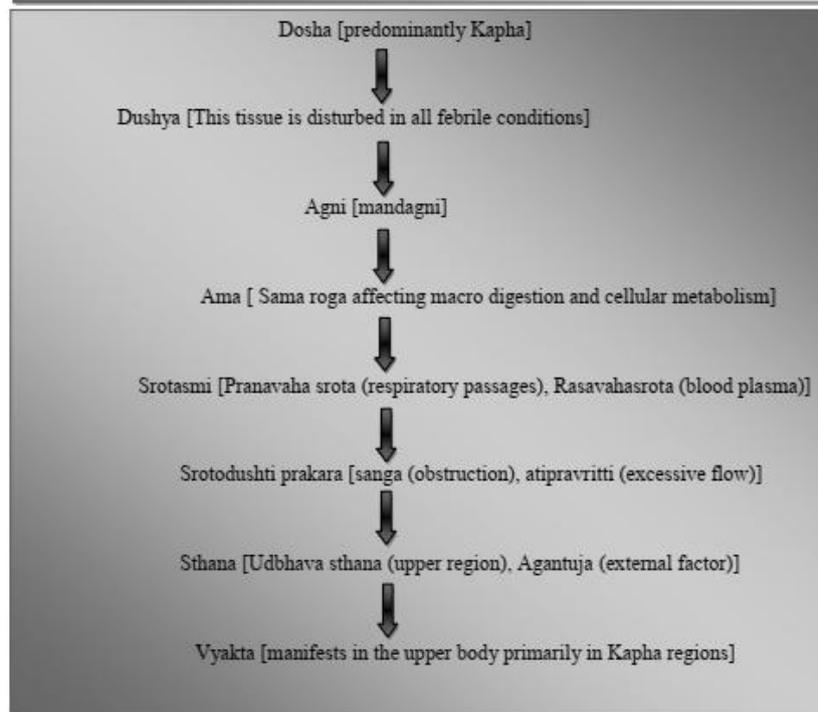
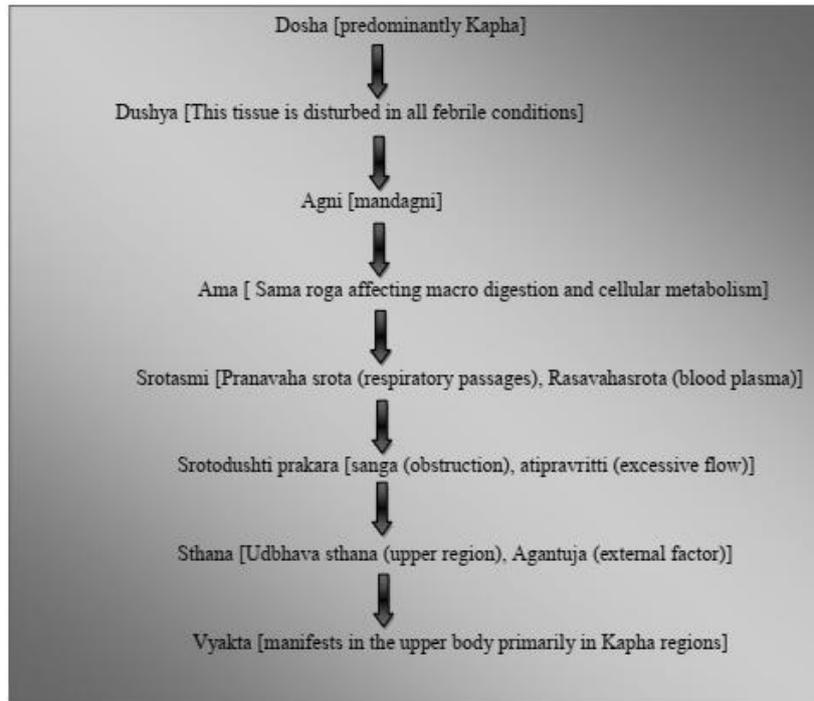
Symptoms

The symptoms of COVID-19 infection come into sight after an incubation period of approximately 5.2 days. The period from the beginning of COVID-19 symptoms to death ranged from 6 to 41 days with a median of 14 days. This period is reliant on the age of the patient and grade of the patient's immune system.

The most frequent symptoms at onset of COVID-19 disease are fever, cough, and fatigue, while additional symptoms consist of sputum production, headache, haemoptysis, diarrhoea, dyspnoea, and lymphopenia [3]. Ayurveda is the perpetual, holistic, Vedic science of life, and the traditional natural healing system of India. Ayurveda tends for ‘*Science of Life*’ and deals with a approach based on holistic. Ayurveda erect a healthy body, and establishes inner peace. This science

branch from the principle that all in the cosmos is made up of the Pancha Mahabuthas or 5 basic elements: Akash (Space), Vayu (Air), Agni (Fire), Jal (Water) and Prithvi (Earth). Combinations of these component pairs build the three biological forces of Tridoshas- Vata (Space & Air), Pitta (Fire) and Kapha (Earth). Balancing these forces leads to a healthy way of life, while disturbance of the balance causes ailments [4].

Samprapti ghatakas (etiopathogenesis)[5]



Boosting immune system

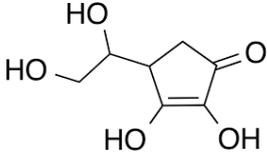
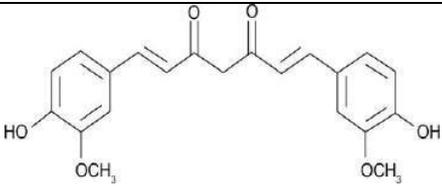
The immune system is a proficient integrated complex of cellular elements and chemicals developed to conserve the integrity of the organism against peripheral infection and its exact functioning and balance are crucial to avoid the incidence of a enormous diversity of disorders. The initiative of “boosting immune system” with herbs alone is alluring, but the ability to do so has proved vague for numerous reasons. Immunomodulators are natural or synthetic substances

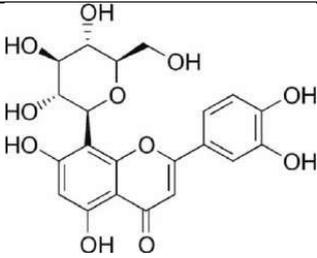
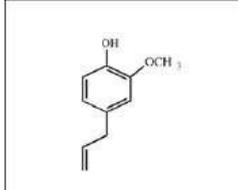
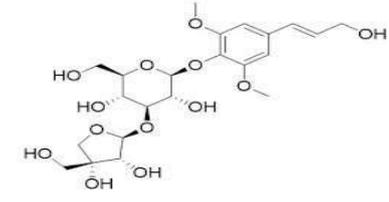
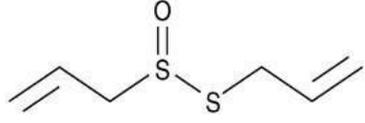
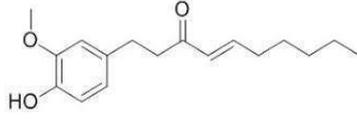
that can arouse suppress or modulate several aspect of the immune system including both adaptive and innate immune system [6].

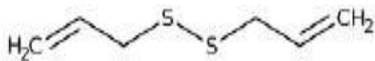
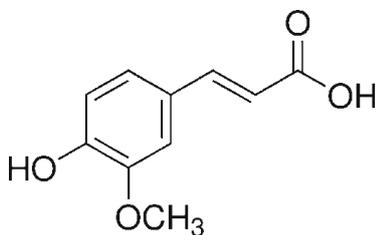
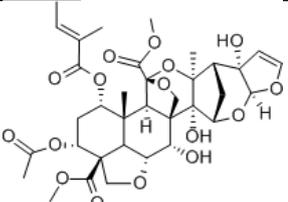
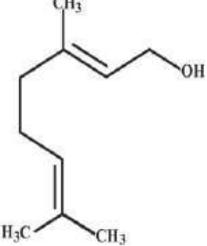
Herbal against for COVID-19: Useful Preventive Measures

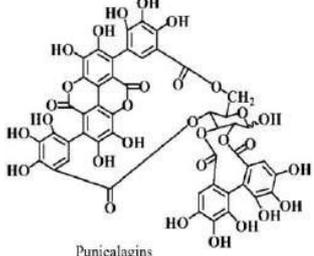
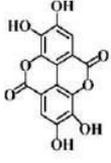
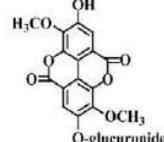
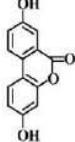
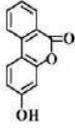
Numerous medicinal plants used in the Indian traditional system recognized as Rasayana. (Enhancement of the body’s resistance) have concerned the attention of scientists globally.

List of Botanical used as Immunomodulators

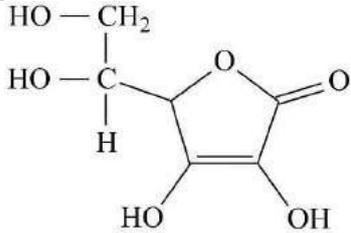
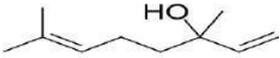
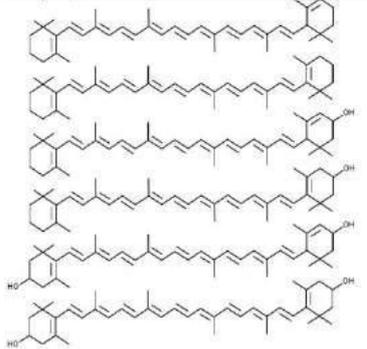
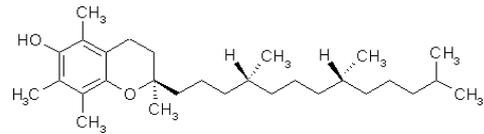
Plant	Description	Major Phytochemicals
Amla (<i>Emblica officinalis</i>)	Amla is used to cure respiratory infections, skin disorders and premature aging. Various investigation have revealed that there is significant increases in white blood cell counts, and other measures of strengthened immunity by taken amla[7].	 <p>Vitamin C</p> 
Piper longum	For past history this spice is used as a medicine to cure diseases associated to the lungs and respiratory system. An extract of the fruits in milk protected guinea pigs against antigen-induced bronchospasm. Piperine is associated with	 <p>Piperine</p>
	Immunomodulatory potential, which engage the activation of cellular and humoral immune responses [8].	
Turmeric (<i>Curcuma longa</i>)	The immunomodulatory potential of curcumin begins from its interface with various immunomodulatory, including not only cellular components like dendritic cells, macrophages, and both B and T lymphocytes, but also molecular components concerned in the inflammatory processes such as cytokines and diverse transcription Factors [9, 10].	 <p>Curcumin</p> 

<p>Tulsi Ocimum sanctum</p>	<p>Ocimum sanctum aqueous extract showed increasing antibody production in dose dependent approach. It enhances the production of RBC, WBC and haemoglobin[11].</p>	 <p>Orientin</p>   <p>Eugenol</p>
<p>Tinospora cordifolia</p>	<p>Alcoholic and aqueous extracts of <i>T. cordifolia</i> have been investigated effectively for immunomodulatory potential. The result revealed that the extract significantly caused macrophage activation [12, 13].</p>	 <p>Cordifolioside A</p> 
<p><i>Allium sativum</i> (Garlic)</p>	<p>Alliin is competent of suppressing LPS inflammatory signals by generating an anti-inflammatory gene expression and prohibited the increase in expression of proinflammatory cytokines IL-6 and MCP-1. Macrophage production of TNF-α and nitric oxide (NO) increases by Alliin in a dose-dependent behavior [14].</p>	 <p>Allicin</p> 
	<p>Ginger extract inhibited IL-12, TNF-α, IL-1β and RANTES, MCP-1, Production in LPS stimulated macrophages [15].</p>	 <p>Shogaol</p> 

<p>Ferula asafoetida</p>	<p>Asafoetida have numerous Pharmacological activities, such as antioxidant, antiviral, antifungal, antidiabetic, Cancer chemopreventive, antispasmodic, hypotensive etc. Diallyl-disulfide and ferulic acid are Main immunostimulant component Present in it [16].</p>	<div style="text-align: center;">  <p>Diallyl-disulfide</p>  <p>ferulic acid</p>  </div>
<p>Azadirachta indica</p>	<p>Azadirachta indica flowers aqueous extract confirmed an increase in the humoral antibody titer in a dose Dependent pattern [17, 18]. Azadirachta indica flowers aqueous extract produced a noteworthy increase in DTH reactivity in mice in dose Dependent pattern.</p>	<div style="text-align: center;">  <p>Azadirachtin</p>  </div>
<p>Coriandrum sativum</p>	<p>Coriander seed extract at the maximum dose (32 mg/kg) produced a noteworthy reduction in Serum IL- 6 and IL-1 β levels[19].</p>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Linalool</p> </div> <div style="text-align: center;">  <p>Geraniol</p> </div> </div>

<p>Punica granatum</p>	<p>Punica rind powder has considerable immuno-stimulatory activity and hepato protective activity [20, 21].</p>	
		<div style="display: flex; flex-wrap: wrap; justify-content: space-around;"> <div style="text-align: center;">  <p>Punicalagins</p> </div> <div style="text-align: center;">  <p>Ellagic acid (EA)</p> </div> <div style="text-align: center;">  <p>Dimethyl ellagic acid glucuronide (DMEAG)</p> </div> <div style="text-align: center;">  <p>Urolithin A</p> </div> <div style="text-align: center;">  <p>Urolithin B</p> </div> </div>

Some important Immunity Booster Phytochemicals

Phytochemical	Structure	Source
<p>Vitamin C</p>	 <p style="text-align: center;">Ascorbic acid (Vitamin C)</p>	<p>Citrus fruits and juices (such as orange and grapefruit), kiwi fruit, peppers, broccoli, strawberries [22,23]</p> 
<p>Carotenoids</p>		<p>Carrots, Kale, Apricots, Papaya, Man go [24].</p> 
<p>Vitamin E</p>		<p>Wheatgermoil, Almonds, sunflower seeds, peanut, butter [25].</p>

Omega-3 Fatty Acids		Oily fish, Flaxseed & Walnuts [26].
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SUMMARY AND CONCLUSION

An herbal drug constitutes a most significant part in all traditional systems of medicine. According to Ayurvedic and other traditional systems of medicine there are approximately 1300 Indian medicinal plants which are used in formulating therapeutic preparations. The Ayurveda's is based on the conception 'dinacharya' (daily regimes) and 'ritucharya' (dietary and lifestyle regimens). Outbreak of pandemic has brought down the world on knee. Pandemic occurs with common symptom like fever, and sore throat pneumonia and bronchitis etc. Gruesome the entire developed and developing country situation arises because of this reveal various lacunae in culture and lifestyle of western country around 16% as compared to their counterpart. India is pioneer in field of Ayurveda since from the commencement of its civilization. Albeit the people in metropolitan prone to westernization of the culture. We can boost and maintain our immunity with aids of the traditional herbaceuticals used in our daily life. It's time to tilt towards the principle of Ayurveda. Regular uses of these doctrines will boost our immunity and in future the pandemic with sporadic symptoms will not jolt our society.

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