



## Review Article

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# Effect of immune-modulators (*Rasayana Dravya*) in *Janapadodhwansa* WSR to COVID-19

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## ABSTRACT

Ayurveda provide a basic way of living to the people and mentioned the different “Charyas” to be done by the individuals in day to day life as well as this ancient science garlanded us with the knowledge and code of conducts to conduct different type of studies like experimental studies, survey studies etc. In this sequence, *Janapadodhwansa*, a chapter describes in *Vimana Sthana* by Acharya Charaka is considered as the chapter of epidemiological study. Where he explained the whole concept on handling the situation of pandemic state. Now, a days It is evident to notify the Pandemic state of China and different countries due to the virus knows as corona virus, which is responsible and causes pressure on societies and health care system. This is the first pandemic condition of 21<sup>st</sup> century which requires internationally unified cogent and collective actions by the individuals, communities, commercial bodies etc. Due to the novelty of the virus, there is no treatment known and no vaccination is available. Only social distancing and other preventive measures are tolls used to deal this emergency. And hence, this condition can be correlated with *Janapadodhwansa*. And *Rasayana* is one of them, which provide the strength against the viral condition and improve the immune response towards this pandemic disease. This article aims to provide information about role of *Rasayana dravyas* (*Gudhuchi*, *Amalaki* and *Haridra*) which can be in cooperated in day to day life and act as immune modulators.

**Keywords:** COVID-19, *Janapadodhwansa*, *Rasayana*.

## INTRODUCTION

COVID-19 which has been declared as pandemic by WHO, has harsh impact globally. No treatment protocol has been mentioned yet; main public advice mainly focuses on frequently hand hygiene and social distancing <sup>(1)</sup>. This concept is mentioned by Acharya Charaka in *Janapadodhwansa* Chapter 3<sup>rd</sup> in *Vimanasthana*.

Due to vitiation of common factors in the population produces same signs and symptoms result in the manifestations of same disease which causes deaths community. *Rasayana sevana* is included in one of its treatment. It produces Dhatu of optimum qualities and could act at the level of *Srotasa* <sup>(2)</sup> which will prove an effective tool in disease management. This can be called as immunomodulators, which can be defined as biological or synthetic substances that can stimulate or suppress or modulate any aspect of immune system including both adaptive and innate arms of the immune system. There are three basic *Rasayana Dravya* mentioned in our classical texts: *Gudhuchi*, *Amalaki*, and *Haridra*, those are acting as the best *dravyas* to build the immunity and provide the strength for combat the diseased condition. They are basically work upon the “*Srotas*” level and responsible for the “*Samprapti Vighatana*”.

## MATERIALS AND METHODS

Classical textbooks of Ayurveda and other compilatory treatises are reviewed for documenting the information about COVID-19, *Janapadodhwansa* and immune-modulator effect of *Gudhuchi*, *Amalaki* and *Haridra*.

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## RELATION OF JANAPADODHWANSA & RASAYANA

*Janapadodhwansa* or *Maraka* is known as the destruction or annihilation of settlements or community<sup>(3)</sup>. Outbreaks of diseases or Epidemics have occurred since immemorial time. Ayurveda exponents of antiquity like Acharya Charaka explained that there are two modes for causing a disease<sup>(4)</sup>:

### 1. Uncommon Causative factors: (ASAADHAARANA)

The factors which are responsible to infect individually like those which depend upon diet, lifestyle, disobey the code of conducts and rules of the way of living.

### 2. Common Causative factors: (SAADHAARANA)

There are four factors responsible for mass infection in the community are *Vayu, Desha, Jala* and *Kaala*.

Now, question arises then why this mass infection is there, even if a person having the different immunity setup, different lifestyle etc. The answer is even if a community dissimilar in cases of its constitution and other attributes of an individuals, but due to the infected uncommon causative factors the people of the community may infected in large numbers<sup>(5)</sup>. That is what happened in the infection of Covid-19. According to WHO, this infection has only the mode of transmission i.e. Droplet infection<sup>(6)</sup>. Naturally it originates from sneezing, talking and breathing which includes different type of cells i.e. epithelial cells, cells of immune system etc. and it contains mucus, saliva as well as some infectious agents like bacteria, viruses and fungi etc. And hence, this virus is potent to cause the mass & spread over 202 countries till date<sup>(7)</sup>. This biological evolved virus causes the uncommon factors mentioned above and further responsible for the mass destruction. Now, this situation refers to the *Janapadodhwansa*.

The foremost treatment is the *Rasayana Chikitsa* for this epidemic condition<sup>(8)</sup>. There are several compounds and herbs those are having the *Rasayana* effect. *Rasayana* is nothing but a therapy which gives the strength to the body to combat the disease. It enriches the basic *Dhatu* i.e. *Rasa* which further resulted in *Sapta Dhatus* of optimum quality and hence, body, soul and mind gets their nourishment. Further, resulted in the compact body with lustre, good immune power and without any disease. *Rasayana* therapy act on the level of *Srotas* and hence, for overpower the self-limiting disease we should use the *dravyas* causes "*Samprapti Vighatana*" (Break the chain of Pathogenesis). *Guduchi, Amalaki, and Haridra* are the basic *dravyas* which having the *Rasayana* properties.

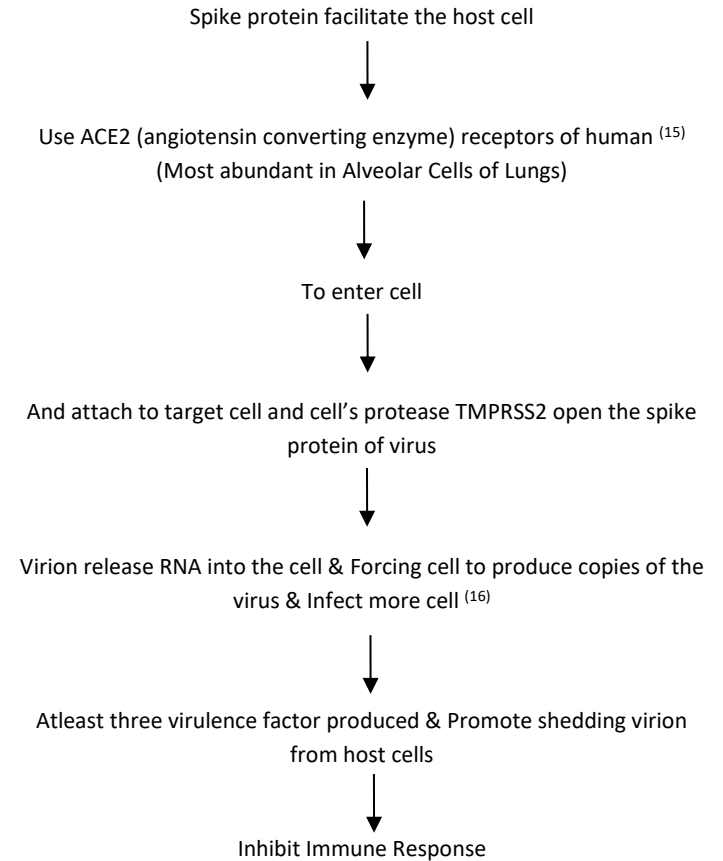
## RELATION OF COVID-19 & IMMUNE MODULATION:

Novel Covid-19 is a self-limiting disease and hence, the only treatment is to take preventive measures. It is known as the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)<sup>(9)</sup>. It is very much like the common flu and having the symptoms of fever, cough, sneezing, fatigue and shortness of breath.

Structurally, it is a positive sense single stranded RNA virus<sup>(10)</sup>, emerged from bat borne virus as having the genetic similarity to bat coronaviruses.

The strain of the virus found first in "Wuhan", a city in China and hence, known as Wuhan virus<sup>(11)</sup>. This is 50-200 nanometres in diameter<sup>(12)</sup>. Mode of transmission is Respiratory Droplet infection through cough and sneeze within 2 meter<sup>(13)</sup> and through the Contaminated Surfaces. SARS-Co-V-2 has four structural proteins: Spike (S), Envelop (E), Membrane (M) and Nucleocapsid (N) in which the first three are the viral envelop and (N) is RNA genome.

### PATHOLOGY<sup>(14)</sup>:



According to Ayurveda, disease is the resultant of imbalanced *Dosha* and *Dushya* which happen due to *Ksheena Vyadhikshamatva* (Low Immunity). Due to the weather conditions, lifestyle and diet pattern the *Vyadhikshamatva* of the individual is decreasing day by day and hence, they are prone to get the infectious diseases very easily. So, to get rid of this disease, we should use those *dravyas* which are useful to improve the immune system. Immune modulators are those which provide strength to the immune effector cells i.e. lymphocytes, macrophages, dendritic cells, natural killer cells, cytotoxic T lymphocyte cells etc. these cells work together and defend the body against the antigen<sup>(17)</sup>.

### THREE RASAYANA AND THEIR IMMUNE MODULATING EFFECT:

*Vyadhikshamatva* (Line of Defence from the Antigen) is depend upon the *Dhatuposhana* (Nourished *Dhatu*) and *Oja*. For the healthful longevity and mindfulness, it is necessary to work upon the *Rasa, Agni* and *Srotasa* level which is done by the *Rasayana* therapy. *Rasayana* may be used in two ways, first as a prophylactic medicine and second as a preventive measure in healthy people.

#### 1. GUDHUCHI (TINOSPORA CORDIFOLIA):

*Gudhuchi*, one of the best and hence considered to be the first in rest of five *Rasayana*, due to its versatility. It is also known as "*Amrita*".

*Gudhuchi* is *Agnideepana*, *Balya*, *Jwaraghna* and *Ama nashaka* and useful for the upper respiratory tract infection, skin diseases, urinary diseases, dyspepsia, general debility, fever, bronchitis, gout etc <sup>(18)</sup>, because of its *Tikta* and *Kashaya Rasa*. It is *Guru & Snigdha* in *guna* <sup>(19)</sup>, *Ushna veerya* and *Madhura Vipaaka* <sup>(20)</sup>. And hence, responsible for pacifying the *Doshas* and resulting in balancing all the *Dhatus*. So, called as the *Rasayani* <sup>(20)</sup>. It can be used in many ways like *Swarasa*, *Satwa*, *Kashaya* etc.

*Gudhuchi* + *Ghrta*: pacify the *Vata Dosh*a <sup>(21)</sup>

*Gudhuchi* + *Gudha*: pacify the *Pitta Dosh*a

*Gudhuchi* + *Madhu*: pacify the *Kapha Dosh*a

Chemical constituents of *Gudhuchi* are diterpenoid lactones, alkaloids, glycosides, steroids, sesquiterpenoid, phenolics, aliphatic compounds and polysaccharides <sup>(22)</sup>. In the Ayurvedic prospective, the antigen releases *Ama* (endotoxins) and resultant in *Vyadhi* (disease). *Gudhuchi* helps in increasing the killing ability of macrophages and acts in infectious diseases through its *Amapachana*, *Agnideepana*, *Jwaraghna* and *Balya* properties. *Gudhuchi* is known to be a rich source of trace elements (Zinc and Copper) which act as antioxidants and protects cells from the damaging effects of oxygen radicals generated during immune activation <sup>(23)</sup>. Novel (1,4)-alpha-D glucans, the activated compound activates the macrophages through signalling of TLR6, translocation of NFkappaB and production of cytokine <sup>(24)</sup>. And enhance the phagocytosis. In some studies, it was also found that it decreases the IgM and increase in Hb which is responsible for more oxygen carrying capacity were observed <sup>(25)</sup>.

## 2. AMALAKI (EMBLICA OFFICINALIS):

*Amalaki* having the significant role and place in *Veda*, *Shiva purana*, *Padma purana*, *Ramayana*, *Charaka Samhita*, *Sushruta Samhita* etc. It is known as “*Amrita Phal*”, and having the supreme place amongst anti-ageing drugs and considered as the one of the best *Dravya* for *Rasayana* Effect which is responsible for the *Sandhaniya Karma* (Improves Cell migration and Cell binding) and *Ayushya* (Prolonged Cell Life) <sup>(26)</sup>. It constitutes an anti-oxidant, Vitamin C, Tannin and Gallic Acid.

*Amalaki* is the nutritious drug and termed as “*Amalaki Vayasthaapanama Shreshthama*” <sup>(27)</sup>. It has low molecular weight hydrolysable Tannins which act as the best anti-oxidant <sup>(28)</sup> herb.

*Amalaki* Fruit contains all the five *Rasas* (*Madhura*, *Amla*, *Tikta*, *Katu*, *Kashaya*) except *Lavana* which alleviates the all three *Doshas* and balance all the *Dhatus* of the body <sup>(29)</sup>.

In the *Guna*, it is *Guru*, *Ruksha* and *Sheeta* and also having the *Sheeta Veerya* with *Madhura Vipaaka* and hence, useful in the alleviation of *Pitta Dosh*a more predominately.

A study suggested that *Amalaki* shown immunostimulant activity and moderate cytoprotective activity <sup>(30)</sup>. But to get the desirable pharmacological action one need to triturate *Amalaki churna* with *Amalaki Swaras*. The contents like tannins, alkaloids, phenolic compounds, amino acids and carbohydrates are proved to be having antipyretic effect. Extracts of *Emblca officinalis* fruits possess potent antipyretic and analgesic activities.

## 3. HARIDRA (CURCUMA LONGA):

The drug well documented in several Ayurvedic Literatures included *Samhita*, *Nighantu*, *Chikitsa Grantha* and *Rasa Grantha*. The study reveals that plant *Haridra* has special attributed with properties like *Daha hara* (alleviating burning sensation), *Ruja hara* (alleviating pain), *Varnya* (complexion promoter) and *Vishodhana* (cleansing of the body) etc. According to *Nighantu*, *Haridra* is *Katu*, *Tikta* in *Rasa*, *Ruksha* in *Guna*, *Ushna* in *Veerya* and *Kapha-Pitta Shamaka* in properties <sup>(31)</sup>.

*Curcuma longa* (*Haridra*) commonly known as turmeric, is a common ingredient in spices and act as a health supplement. It is also used in various therapeutic applications such as blood purifying, wound healing, and inflammatory disorders and holds a prominent position in traditional Indian medicinal system <sup>(32)</sup>.

The key constituent is curcuminoids, those are potent anti-inflammatory agents working through multiple mechanisms, such as <sup>(33)</sup>:

- Suppression of the activation of nuclear factor (NF)-kappa B,
- Inhibition of cyclooxygenase (COX)-2,
- Down-regulation of the expression of cell proliferation, anti-apoptotic, and metastatic gene products.

It has a wide role in the modulation of proliferation and cellular response of many immune cell types, i.e. T cells, B cells, macrophages, neutrophils, natural killer NK cells and dendritic cells <sup>(34)</sup>. And hence, act as Immune Modulator. It also acts as anti-inflammatory, anti-oxidant and chemo-preventive due to the constituents like turmerones and sesquiterpenoids <sup>(35)</sup>.

Due to its Polysaccharides content it enhances the host defense mechanisms and therefore it is a very useful herb in Covid-19 (*Janapadodhwansa*) as it basically depends upon hoe the body and their line of defence react towards the antigen. Polysaccharides and polysaccharide containing plant products have been demonstrated for immune-modulatory activity in various pre-clinical and human clinical models after oral administration. In addition, polysaccharides have been shown to be bioavailable in various *in vivo* and human clinical models after oral administration <sup>(36)</sup>.

## CONCLUSION

The basic principle and practice of *Rasayana* is based upon the immunomodulation. It boosts up the immunity and help to keep the body and mind in the best of its health. Due to its multidimensional activity, it performs as a substance which is responsible for taking care of body, mind and spirit and thus affecting total wellbeing. *Rasayana* acts on the three levels of the bio-system i.e.

- At the level of *Agni* by promoting digestion and metabolism
- At the level of *Srotas* by promoting microcirculation & tissue perfusion
- At the level of *Rasa* itself by acting as direct nutrient

And hence, these *Rasayana Dravyas* has been used as the first line of defence for *Janapadodhwansa* (Epidemic Condition). The stress, unhealthy nutrition and continuous exposure to several toxins in the

present era lead to compromised immune system. Therefore, immunomodulation should be of central importance in medical field to combat several infective, chronic, autoimmune & inflammatory diseases.

#### Source of Support

None.

#### Conflict of Interest

None declared.

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