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## Review Article

## Ayurvedic Rasayan formulations having potential for managing post COVID ailments- A narrative review

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## ABSTRACT

COVID-19 is an infectious disease caused by the newly discovered coronavirus. COVID-19 is caused by severe acute respiratory syndrome coronavirus 2 (SARS-COV2). COVID-19 shows long term effect on multiple systems such as respiratory, circulatory, digestive system, nervous system, etc. Post COVID / long COVID syndrome for people, who have symptoms after 4 weeks -12 weeks of acute infection to up to one year. The most common symptoms reported are fatigue, anorexia, joint pain, dyspnea, headache, anxiety. *Ayurvedic Rasayan* (Rejuvenators drugs) deals with enhancing immunity as well as effective in multiple disease condition. *Rasayan* therapy (Rejuvenating) may be useful in treating post COVID ailments. Here we provide comprehensive review of *Ayurvedic Rasayan* (immuno modulatory) formulations for treating post COVID ailments.

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## 1. Introduction

COVID-19 is an infectious disease caused by the newly discovered coronavirus. COVID-19 is caused by severe acute respiratory syndrome coronavirus 2 (SARS-COV2). It is a high-enveloped single-strand RNA virus that is found in humans and animals, it belongs to the Coronaviridae family. This paper is intended to review and elaborate the ayurvedic rejuvenating formulations i.e. '*Rasayana*' for managing the post COVID challenges in patients. In Ayurveda, in the ancient text *Sushrut Samhita* there is mention of *aupasargik* disorders which spread by contact of patients' used cloths, ornaments, bedding etc. Contagious diseases are hence described by *Sushruta*.<sup>1</sup>

## 1.1. COVID-19 outbreak all over world

On 31<sup>st</sup> December 2019 WHO was informed about patients with pneumonia with unknown cause in Hubei Wuhan City, China. Novel corona virus was identified as a cause, by Chinese authorities on 7<sup>th</sup> January 2020 and named "n-COV". Meanwhile, 2019 n-cov was renamed "SARS-COV2" by the international committee on taxonomy of viruses. WHO has declares this a global health emergency at the end of January 2020. First case of COVID-19 in India were reported on 30 January 2020, after September 2020 high peak period noted and cases declined at the end of October 2020. It took a more than one year to outright 1<sup>st</sup> wave of infection. Since the middle of March 2021, the 2<sup>nd</sup> wave has started and on April 09 2021 highest cases has been recorded in India.<sup>2</sup> 3<sup>rd</sup> wave of Omicron has started at 3<sup>rd</sup> week of November 2021 in India.

Till the date 014 June 2021, 528,816,317 confirmed cases and 6,294,969 deaths recorded globally. In India there

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have been 43,236,695 cases with 524, 777 deaths reported to India.<sup>3</sup> A list of variants of concern as per WHO mentioned<sup>4</sup> in Table 1.

### 1.2. Post COVID

In the guideline, two definitions of post-acute COVID-19 are given :1) Ongoing symptomatic COVID-19 for people who still have symptoms between 4 to 12 weeks after start of acute symptoms; and 2) Post COVID syndrome for people who still have symptoms for more than 12 weeks after the start of acute symptoms This may last up to 1 year<sup>5,6</sup> Only 10.8 % of patients had no manifestation, once recovered from the disease. The most common symptom reported was fatigue, seen in almost 72.8 % followed by anxiety in 38%, joint pain in 31.4%, and continuous headache in 28.9% cases. Also, critical manifestations like diabetes mellitus, pulmonary fibrosis, stroke, renal failure, etc. were reported by the subjects.<sup>7</sup> The common symptoms recorded in the post COVID ailments are shown in Figure 1.

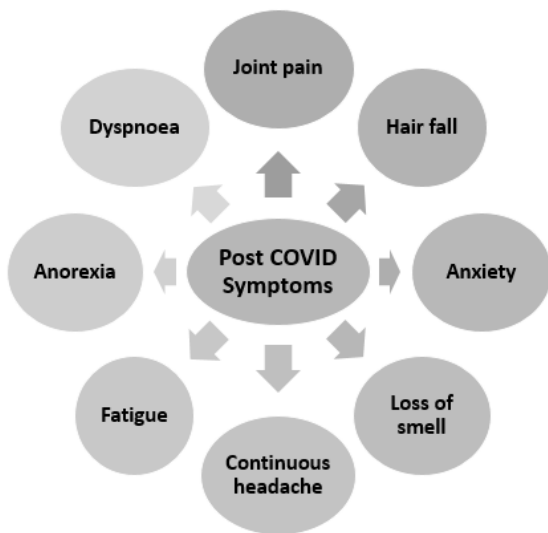


Fig. 1: Most common symptoms of post COVID.

### 1.3. Adverse effects of modern medications

In the treatment of acute COVID-19, several drugs are used such as chloroquine, hydroxychloroquin (HCQ), favipiravir, ivermectin, azithromycin, remdisivir, methylprednisolone, tocilizumab, etc. Chloroquine has shown psychiatric side effects like stress insomnia, visual hallucination, anxiety and GIT problem in COVID-19 patients.<sup>8</sup> It is also reported that some serious issues regarding use of HCQ such as muscle weakness, diplopia, seizures, insomnia, irritability, depression, anxiety have been reported. Azithromycin and Dexamethasone were widely used in acute COVID-19 cases having antibiotic and anti-inflammatory action respectively

but were not significant. Most common side effects of azithromycin and dexamethasone are gastritis, vomiting, headache recorded. Remdisivir also reported severe side effects such as organ failure, GIT upset, increased level of liver enzymes.<sup>9</sup> Tocilizumab is immunosuppressive humanized monoclonal antibody drug has significantly inhibiting IL6 enzyme but many side effects were recorded such as respiratory failure, GIT upset, headache, hypertension, reactivation of herpes zoster.

Vaccination do not provide full (100%) protection. Oxford AstraZeneca vaccine shows Up to 72% efficacy with who received 2 standard dose with varying 4 to 12 weeks interval.<sup>10</sup> Bharat Biotech BBV152 COVAXIN shows efficacy with specific post dose 2, only 65 % against Delta variant. Till the date No data available for efficacy of vaccination against Omicron variant & XE Variant.<sup>11</sup>

COVID is infectious disease mainly affect respiratory disorder, circulatory system. In COVID patients, Agnimandya (weakened digestive power) as a residual symptoms of post COVID which leads to *dhatukshya avastha*. *Dhatukshaya* can be treated by administrating *Rasayan* drugs (immunobooster) and it is also deals with enhancing immunity or rejuvenating body tissues. Hence it is possible to prevent further complications. Hence *Rasayan chikitsa* may be useful in post COVID management of patients. Ministry of AYUSH has also recommended chyawanprash as *rasayan* (immunomodulatory medicine) in post COVID management.<sup>12</sup>

## 2. Rasayan Concept in Ayurveda

The drugs which are rejuvenators and lead to longevity in humans are known as *Rasayan*. Drugs which ward off old age and diseases are called *Rasayan* (Rejuvenators).<sup>13</sup> There are 2 types of *Rasayan* on the basis of therapy i.e *Kutipraveshtik Rasayan* (indoor specialized therapy) and *Vatatpika Rasayan* (outdoor therapy) described in *Charak Samhita*. *Kutipraveshtik Rasayan* includes strict rules and restrictions regarding diet and lifestyle. *Vatatpika* is includes OPD based prescription and patient can continue their normal lifestyle. There are no strict restrictions on daily diet and activity. For instance, the well-known formula *Chyawanprash* can be administered by both ways, as indoor and outdoor therapy. A recent study on *chyawanprash* shows potential prophylactic agent against infection of SARS-COV2.<sup>14</sup> Ministry of AYUSH, Government of India also recommended *chyawanprash* for prophylactic care as well as post COVID management.<sup>12</sup> Outdoor therapy of *rasayan* is more convenient a nowadays, which does not include stay in *kuti* [special room] and does not require strict diet, a drug dose is less, convenient. Among two *Kutipraveshtika Rasayan* is superior to *Kutipraveshtika Rasayan* However, now a days *Vatatpika Rasayan* are commonly used. The benefits of *rasayan* therapy ( rejuvenating) are shown in Figure 2<sup>15</sup>

**Table 1:** Variants of concern as per WHO

Sr. No.	Name of variant	Lineage	First outbreak	WHO declared
1.	Alpha	B.1.1.7	United Kingdom	18 December 2020
2.	Beta	B.1.351	South Africa	18 December 2020
3.	Gamma	P.1	Brazil	11 Jan 2021
4.	Delta	B.1.617.2	India	11 may 2021
5	Omicron	B.1.1.529	South Africa	26 November 2021

Omicron have sub variants including BA.1, BA.2, BA.3, BA.4, BA.5. It also include BA.1 /BA.2 recombinant form such as XE. Recently India started recording few new cases of BA.4 and BA.5, most of them have completed vaccination.

**Fig. 2:** Benefits of consuming rejuvenating formulations i.e. Rasayan

In Ayurveda classic texts, number of drugs (herbs/medicine) mentioned known for *Rasayan* drugs (Immunomodulatory) activity as well as its efficacy in multiple disorders. *Rasayan* drugs mentioned in different pharmaceutical forms including herbal powder, fresh herbs juice, medicated milk, medicated ghee, semisolid formulations. In *Charak Samhita*, prophet *Charak* mentioned a specialized category under *medhya rasayan* (formulations to improve memory & intellect) i.e juice of *Centella asiatica*, *Glycyrrhiza glabra*, *Tinospora cordifolia* and *Convolvulus pluricaulis*.

Following are some of the common symptoms of post COVID patients, which need to be treated. Ayurvedic *Rasayan* drugs can be promising for such treatment. Many Ayurvedic physicians are prescribing some of these rasayan formulations for preventing and treating COVID-19 related symptoms.

### 3. Post COVID Health Challenges in Patients

#### 3.1. Fatigue

The most common symptom reported in post COVID. Post COVID fatigue is defined as decrease in the physical and /or mental performance that result from changes in central, psychological and/or peripheral factor due to COVID-19 disease.<sup>16</sup>

#### 3.1.1. Central nervous system related factors

Central factors influencing post COVID fatigue may be result of virus invading CNS. Following phenomenon may be responsible for fatigue.

A) Neurotransmitter levels like dopamine, serotonin. In recent studies have been reported, alteration in serotonin and dopamine in COVID-19 pathophysiology<sup>17</sup> dopamine, serotonin which is important for pleasure, motivation and action.

B) Intrinsic neuronal inflammation

C) Demyelination

#### 3.1.2. Psychological factors

Quarantine protocol, social distancing, isolation have proven effective role in slowing spread of virus, but further which result in stress, anger, anxiety, depression. Due to alteration the levels of neurotransmitter like dopamine and serotonin. *Rasayan* containing *Tinospora cordifolia*, *Centella asiatica*, *Glycyrrhiza glabra*, *Convolvulus pluricaulis*, gold are used for reducing stress, anxiety.

#### 3.1.3. Peripheral factors

Post COVID fatigue may also occur from several peripheral factors. COVID-19 have ability to infect multiple tissue types, with special potential to target skeletal muscles and therefore contribute to fatigue.<sup>18</sup> In active COVID-19 lungs activates various leucocytes to cascade of cytokine, like interleukin.<sup>6</sup> Elevation of IL6 may disturb muscle haemostasis and muscle loss which result into fatigue. In recent studies shows dysregulation of immune system due to COVID-19 which specifically act on lymphocytes, T lymphocytes, neutrophil-lymphocyte ratio.<sup>19</sup>

Ayurveda, *fatigue* can be correlated with the *shrama* which is the symptom of *Rasavaha srotas* disturbance. This is most common symptom after COVID infection. Due to weakened digestive power (*agnimandya*) there is generalised anorexia in active COVID-19. This can be treated with the help of *Rasayan chikitsa* like *Bramha Rasayan*, *Chywanprash*, *Amalak Rasayan*, *Nagbala Rasayan*, *Haritakyadi Rasayan*, *Vidangadi Rasayan*, *Haritakyadi yoga*, *ippali Rasayan*, *Vardhman Pippali Rasayan* in general, the *Rasayan* which contain *Phyllanthus emblica* and *Terminalia chebula* are known for rendering

longevity and rejuvenation of full body. In Ayurveda, *Amalaki* is a fruit known as the best drug for immune modulatory action, leading to prevention of aging.

### 3.2. Headache

Headache is frequent symptom of ongoing SARS-COV2 infection however headache continuous even after recovery. It can spread throughout skull, giving a feeling of constriction and weight at the top of head. If the infection affects a subject who already suffering from migraine, it multiplies the crises. The exact pathophysiology is unknown but some studies believe that pain may be due to the cytokine storm.<sup>20</sup> No medications have shown beneficial effective till date. *Rasayan* containing *Withania somnifera*, *Sida cordifolia*, *Shatavari* (*Asparagus racemosus*), *Chyawanprasha* are useful for treating headache.

### 3.3. Weight loss

Weight loss is defined as 5% reduction of body weight from initial weight. Earlier study found that weight loss and malnutrition were highly prevalent in COVID-19 survivors. Nearly 30% patient lost 5% of baseline body weight and half were at risk of malnutrition. COVID-19 is significantly associated with unintentional weight loss and malnutrition have been recently reported over three month follow up after discharged.<sup>21</sup> Several mechanisms may contribute to weight loss and malnutrition like alteration of smell, taste, lack of appetite could affect food intake, fatigue, chronic polymorbidities, prolong ICU or hospital stay, older age, assisted ventilation. Patients with severe hyper inflammation (peak CRP values), impaired renal Function (GFR less than 60ml/min/1.73m<sup>2</sup>) and cytokine storm may affect the nutrition.<sup>22</sup> In active COVID-19 lungs activates various leucocytes to cascade of cytokine, like interleukin.<sup>6</sup> Elevation of IL6 may disturb muscle haemostasis and muscle loss which leads to significant weight loss.<sup>18</sup>

Weight loss might be due the multiple etiology, such that hampered digestion power, effect of severe viral infection leading to wasting of body, as well as due the various drugs used in acute COVID-19 and impaired multiple functions. For treating weight loss, the *rasayan* containing gold *bhasma*, *Asparagus racemosus*, *Withania somnifera*, *Sida cordifolia*, *Chyawanprash* are useful. Cow ghee (clarified butter) is a part of many *rasayan* drugs, which helps in treating weight loss.

### 3.4. Anorexia after COVID infection

One of the most commonly seen symptoms in acute COVID-19 as well as post COVID. COVID-19 has potential to alteration in gut micro biome (gut dysbiosis) even after the clearance of SARS-COV2.<sup>23</sup> In recent study found that microbiota was not restored to normal levels after

6 months of acute COVID-19 infection.<sup>24</sup> Anorexia is also side effect of drugs viz. chloroquinine, hydrochloroquinine, azithromycin, dexamethasone, remdisivir, tocilizumab which were used in treating infected patients of COVID-19.

### 3.5. Hairfall after COVID-19 infection

Hair loss is evident in many patients who recovered from COVID-19 due to the vitamin deficiency, hormonal abnormality in the psychological factors like depression, anxiety may occur hair loss. Drugs used in the treatment of acute COVID-19 can lead to hair loss.<sup>25</sup> The formulations such as *Amalaki Rasayan*, *Amalak Ghrita*, *Triphala Rasayan* which contains *Phyllanthus emblica*, *Terminalia chebula*, *Terminalia bellerica* highly effective for treating hair loss.

In this paper the *rasayan* which are commonly used in practise, and which are having potential to benefit the general population to tackle post COVID ailments, have been reviewed. Further research is necessary in this area. A list of *rasayan* for treating post COVID ailments or immune modulatory actions are summarized in the Table 2.

## 4. Discussion

Preparation of these *awaleha* or *rasayan* is carried out by specific processes. Details of these processes may be referred from the original Ayurvedic classic. Usually *rasayan* preparations involve many steps like heat, boiling, steaming, levigation, frying of the pulp of *Amalaki* or other fruits in ghee or oil, addition of aromatics herbs etc. Generally, process of manufacturing *rasayan*, *awaleha* are tedious. The choice of the *rasayan* is totally depend upon the age, strength, body constitution, disease condition of patients. E.g *Lashun Rasayan*, *Bhallatak Rasayan* are recommended for *pitta prakriti* individual and diseases, it is best choice for *kaphaj prakriti* and diseases. Even a normal person can consume suitable rejuvenating formula after consulting an Ayurvedic physician. If any complications occur due to intake of *rasayan*, it should be stopped immediately, and the diseases should be treated properly. There are no reports of any adverse drug reactions by common *Rasayan* formulations like *Chyawanprash*. (*Charak Samhita* 1/29. The main application of *Rasayan* formulations is rejuvenation of body tissues. Ayurveda proposes mild laxative drugs (bio-cleansing) before *rasayan* intervention. *Charak Samhita* mentioned only one preparation namely *Haritakyadi* powder for cleansing of the intestines before taking rejuvenation medicines. For best results of *rasayan* such intervention is needed, with consultation of Ayurvedic physician. *Chyawanprash* is widely used in COVID-19 pandemic as immunomodulation. *Chyawanprash* was extensively used by large number of patients during the COVID outbreak.

**Table 2:** Rasayan formulation for treating post COVID ailments.

Sr. No.	Name of the Rasayan	Main ingredients	Ayurvedic classical reference	Therapeutics [as per Ayurvedic classics ]	Potential therapeutic use in post COVID management
1.	<i>Pratham Brahma Rasayan</i>	<i>Terminalia chebula</i> , <i>P. emblica</i> and decoction of specific herbs, oil, ghee (clarified butter), candy sugar etc.	Charak Samhita	Drowsiness, fatigue without physical exertion, Dyspnea, Memory intellect, trength	Respiratory system, Circulatory system related post COVID ailments
2.	<i>Dvitiya Brahma Rasayan</i>	<i>P. emblica officinalis</i> , <i>Sida rhombifolia</i> , <i>clarified butter</i> , <i>honey</i> , <i>gold bhasma silver bhasma</i> , <i>copper bhasma</i> , <i>praval bhasma</i> .	<i>Charak Samhita</i>	logetivity, Immense strength, Glow	Respiratory system, Circulatory system related post COVID ailments
3.	<i>Chavanprasha</i>	<i>P. emblica</i> , Decocation of <i>dashmoola</i> ( group of 10 herbs) and <i>jeevaniya varga</i> ( anti -aging drugs), <i>ghrita</i> (clarified butter), <i>sesame oil</i> , honey.	<i>Charak Samhita</i>	Cough, dyspnoea, thoracic trauma, ascites, rheumatism due to blood, thirst, old age, <i>childern</i>	Respiratory system, Circulatory system related post COVID ailments
4.	<i>Amalak Rasayan</i>	<i>P. emblica</i> <i>Terminalia bellerica</i> , <i>Terminalia chebula</i>	Charak Samhita	physical and mental strength	Respiratory system, Circulatory system related post COVID ailments
5.	<i>Haritakyadi Rasayan</i>	Decocation of <i>T. chebula</i> , <i>E. officinalis</i> <i>Terminalia bellerica</i> , group of five herbs, etc. cow's milk, clarified butter	Charak Samhita	Increased physical, Sensory organ, Intelligence, strength	Respiratory system, Circulatory system, Digestive related post COVID ailments
6.	<i>Haritikyadi Yoga</i>	<i>P. emblica</i> <i>ghrita</i> (clarified butter), honey	Charak Samhita	Rejuvenation	Respiratory system, Circulatory system, Digestive related post COVID ailments
7.	<i>Amalak ghruta</i>	<i>P. emblica</i> , <i>Boerhavia diffusa</i> , <i>Puraria tuberosa</i> <i>Leptadenia reticulate</i> , clarified butter	Charak Samhita A.S (Amalakavaleha)	Rejuvenation	Respiratory, Circulatory system, Digestive related post COVID ailments
8.	<i>Pratham Amalakavaleha</i>	<i>P. emblica</i> , <i>B.monosperma</i>	Charak Samhita	Rejuvenation	Respiratory, Circulatory system, Digestive related post COVID ailments
9.	<i>Amalak choorna</i>	<i>P. emblica</i> , <i>Piper longum</i> , <i>honey</i> , <i>ghrita</i> , candy sugar	Charak Samhita	Rejuvenation	Respiratory, Circulatory system
10.	<i>Vidangaavaleha</i>	<i>Embelia ribes</i> , <i>P.longum</i> , candy sugar, <i>ghrita</i> , sesame oil, honey	Charak Samhita	Rejuvenation	Respiratory, Digestive system related ailments

Continued on next page

Table 2 continued					
11.	<i>Dvitiya amalakavaleha</i>	<i>P.emblica</i> , <i>Butea monosperma</i> <i>E. ribes</i> , <i>P. longum</i> , candy sugar, <i>ghrita</i> , tila taila, honey	Charak Samhita	Rejuvenation	Respiratory, Circulatory, Digestive system related ailments
12.	<i>Nagabala Rasayan</i>	<i>Grewia hirsuta</i> , cow's milk/ <i>ghrita</i>	Charak Samhita	Rejuvenation	Circulatory, Nervous, Digestive Musculoskeletal system
13.	<i>Baladi Rasayan</i>	<i>Sida cordifolia</i> , <i>Abutilon indicum</i> , <i>Santalum album</i> , <i>Boerhavia diffusa</i> etc.	Charak Samhita	Longevity	Respiratory, Circulatory system, Digestive related ailments
14.	<i>Bhallatak</i> – the no. of formulations mentioned as Rasayan which is only useful in kaphaj vyadhi, ( disorder)	<i>Semecarpus anacardium</i>	Charak Samhita	Rejuvenation	Respiratory, Circulatory system, Digestive related post COVID ailments
15.	<i>Amalakayas brahma Rasayan</i>	<i>P. emblica</i> Decocation of many herbs	Charak Samhita	Intellegance, sensory strength	Respiratory, Circulatory system, Digestive related post COVID ailments
16.	<i>Kevalamalak Rasayan</i>	<i>P. emblica</i>	Charak Samhita	Rejuvenation	Respiratory, Circulatory system, Digestive related post COVID ailments
17.	<i>Aindra Rasayan</i>	<i>Bacopa monnieri</i> , <i>Acorus calamus</i> , <i>P. longum</i> , etc. <i>Gold bhasma</i> , <i>Aconitum ferox</i> , clarified butter	Charak Samhita	<i>Ojovardhak</i> , <i>Vitiligo</i> integumentary disease ascites lump, splenomegaly, fever, memory intellect knowledge, Intoxication, Syncope, comma	Respiratory, Circulatory system, Digestive, Nervous, Integumentary, related post COVID ailments
18.	<i>Pippali Rasayan</i>	<i>P. longum</i>	Charak Samhita	cough, dyspnea, hiccup, haemorrhoids disorder of lower GIT, anaemia, rhinitis,swelling, lump	Respiratory system, Digestive system, related post COVID ailments
19.	<i>Vardhman Pippali Rasayan</i>	<i>P. longum</i>	Charak Samhita	Nourishing therapy	Respiratory system, Circulatory, Digestive system, related post COVID ailments
20.	<i>Triphala Rasayan</i>	<i>T. chebula</i> , <i>Terminalia bellerica</i> <i>P.emblica</i> , honey, <i>ghrita</i>	Charak Samhita	Rejuvenation	Respiratory system, Circulatory, Digestive system, related post COVID ailments
21.	<i>Dvitiya Triphala Rasayan</i>	<i>T.chebula</i> , <i>T.bellerica</i> <i>P. emblica</i> , honey	Charak Samhita	Rejuvenation	Respiratory system, Circulatory, Digestive system related post COVID ailments

Continued on next page

<i>Table 2 continued</i>						
22.	<i>3<sup>rd</sup> Trihala Rasayan</i>	<i>Glycyrrhiza glabra, P.longum, Bambusa Arundinacea, honey, ghrita</i>	Charak Samhita	Memory, Intellect, strength Fever		Respiratory system, Circulatory, Digestive system, Nervous related post COVID ailments
23.	<i>4<sup>th</sup> Trihala Rasayan</i>	Combinationa of <i>T.chebula, T.bellerica P. emblica, Acorus calamus, P.longum, E. ribes ,etc. ghrita, Cows milk,</i>	Charak Samhita	Memory, Intellect, strength Fever		Respiratory system, Circulatory, Digestive system, Nervous related post COVID ailments
24.	<i>Indrokta Rasayan</i>	<i>Bacopa monnieri, Asparagus racemosus, Punarnava B. diffusa, etc</i>	Charak Samhita	Rejuvenation		Respiratory system, Circulatory, Nervous related post COVID ailments
25.	<i>Dvitiya (2<sup>nd</sup> ) indrokta Rasayan</i>	<i>P. longum, Rascoea purpurea, S.rhombifolia. Etc. , ghrita, cow milk, tila taila</i>	Charak Samhita	Rejuvenation		Respiratory system, Circulatory, Nervous related post COVID ailments
26.	<i>Abhayamlak- avleha</i>	<i>T. chebula P. emblica, P.longum sugar, honey</i>	Ashtang Hriday	Longetivity, Memory, Intellect		Respiratory system, Digestive system, Circulatory system, related post COVID ailments
27.	<i>Aamalak Rasayan</i>	<i>P. emblica</i>	Ashtang Hriday	Rejuvenation		Respiratory system, Digestive system, Circulatory system, related post COVID ailments
28.	<i>ChyawanprasaRasayan</i>	<i>P. emblica , decoction of many other herbs, honey, ghrita, taila</i>	Ashtang Hriday	cough, dyspnea, fever, swelling, Heart diseases, Rheumatism due to rakta, diminution of urine quantity, diminution of semen Regulatory functional factors of the body , memory, intellect, glow, attain health, disorders due to vat		Respiratory, system, Digestive system, Circulatory system, Excretory system, Nervous system related post COVID ailments

*Continued on next page*

Table 2 continued					
29.	<i>Triphala Rasayan- With 1.Yashtimdu 2. pippali 3.vanshalochan 3. saindhav 4.Roupya bhasma 5. Tamra bhasma 6. seesak bhasma 7. vanga bhasma 8. louha bhasma 9. Swarna bhasma 10. vacha choorna 12. Madhu ghruta</i>		Ashtang Hridaya	Memory intellect longevity	Respiratory system, Digestive system, Circulatory system, Nervous system related post COVID ailments
30.	<i>Chitrak Rasayan</i>	<i>Plumbago zeylanica</i>	Ashtang Hriday	<i>Disorders due to vata, haemorrhoids</i>	Respiratory system, Circulatory system related post COVID ailments
31.	<i>Bhallatak Rasayan (1) Bhallatak taila</i>	<i>Semecarpus anacardium</i>	Ashtang Hriday	Increase digestive power (Appetite) Worms, diabetes, haemorrhoids.	Respiratory system, Digestive system, Circulatory system, related post COVID ailments
32.	<i>Lashun Rasayan</i>	Juice of garlic ( <i>Allium sativum</i> ) with <i>sura</i> ( alcoholic preparation), <i>sesame oil</i> , curd water, <i>kanji</i> , or <i>vasa</i> , <i>ghrita</i> , milk	Ashtang Hriday	Rejuvenation	Disorders due to kapha, Respiratory system
33.	<i>Haritaki Rasayan</i>	<i>T. chebula</i> , jaggery, honey, <i>Zingiber officinale</i> , <i>P.longum</i> <i>Saindhav</i> ( Rock salt)	Ashtang Hriday	Rejuvenation	Respiratory system, Digestive system, Circulatory system, related post COVID ailments
34.	<i>Haritaki Rasayan</i>	<i>T. chebula</i>	Ashtang Hriday	Rejuvenation	Respiratory system, Digestive system, Circulatory system, related post COVID ailments
35.	<i>Amalaki Rasayan</i>	( <i>E.officinalis</i> ) juice with honey and sugar	Ashtang Hriday	Rejuvenation	Respiratory system, Digestive system, Circulatory system, Nervous related post COVID ailments
36.	<i>Dhatryadi Rasayan</i>	<i>P. emblica</i> , <i>Embelia ribes</i> , honey, <i>ghrita</i> , <i>louha bhasma</i>	Ashtang Hriday	Young looking appearance	Respiratory system, Digestive system, Circulatory system, Nervous related post COVID ailments

Continued on next page



Table 2 continued					
37.	<i>Triphala Rasayan</i>	Combinationa of <i>T.chebula</i> , <i>T.bellerica</i> <i>P. emblica</i> . <i>Acacia</i> <i>catechu</i> , <i>ghrita</i> , honey	Ashtang Hriday	Rejuvenation	Circulatory system, Digestive, musculoskeletal system, Nervous system
38.	<i>Punarnava Rasayan</i>	<i>B.diffusa</i> paste with Cow's milk	Ashtang Hriday	Rejuvenation	Circulatory system, Digestive
39.	<i>Shatavari Rasayan</i>	<i>Asparagus racemosus</i>	Ashtang Hriday	Rejuvenation	Circulatory system, musculoskeletal system, Nervous system
40.	<i>Ashwagandha Rasayan</i>	<i>Withania somnifera</i>	Ashtang Hriday	Rejuvenation	Circulatory system, musculoskeletal system
41.	<i>Vidang Yoga</i>	A) <i>E.ribes</i> seeds , <i>G .glabra</i> , madhu B) <i>E.ribes (G.glabra)</i> – with honey and C) <i>S.anacardium</i> <i>Decocotion</i> D) <i>E,ribes seeds</i> , <i>G.</i> <i>glabrra</i> - With madhu <i>draksha</i> <i>decocotion</i> E) <i>Vidang</i> beeja+ <i>Yashtimadhu</i> -with Madhu and Amalaki juice F) <i>Vidang</i> beeja+ <i>Yashtimadhu</i> -With <i>Guduchi(Tinospora cordigolia)</i> <i>decocotion</i>	Sushruta Samhita	worm infestation retention of mind within control, increases lifespan	Circulatory system, digestive system, Nervous related post COVID ailments.
42.	<i>Bala yoga</i>	<i>Abutilon indicum</i> , <i>S. rhombifolia</i> , <i>Puraria tuberosa</i> <i>A.racemosus</i> with milk	Sushruta Samhita	Epistaxis, Vomiting blood	Circulatory, Musculoskeletal, Nervous system related post COVID ailments.

AYUSH ministry had advised consumption of *Chyawanprash* for tackling COVID infections as a preventive and supportive drug. Ayurvedic classics advocate many rejuvenating formulas which can be used with consultation from Ayurvedic physicians for attaining strong immunity and tackling post COVID ailments.

## 5. Conclusion

The rejuvenation drugs like *Chyawanprash* can play a vital role in management of COVID-19 and its post infection ailments. There are long term symptoms which affect the COVID-19 patients. To prevent serious long term ailments, immunity boosting treatment and rejuvenating treatment of Ayurved can help. As the Ayurvedic drugs are natural, cost effective than modern medications.

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None.

## 7. Conflict of Interest


None

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