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EFFICACY OF AYURVEDA THERAPEUTICS IN PREVENTION AND
MANAGEMENT OF COVID 19 PANDEMIC AND POST COVID
RECOVERY PHASE: AN EVIDENCE BASED REVIEW

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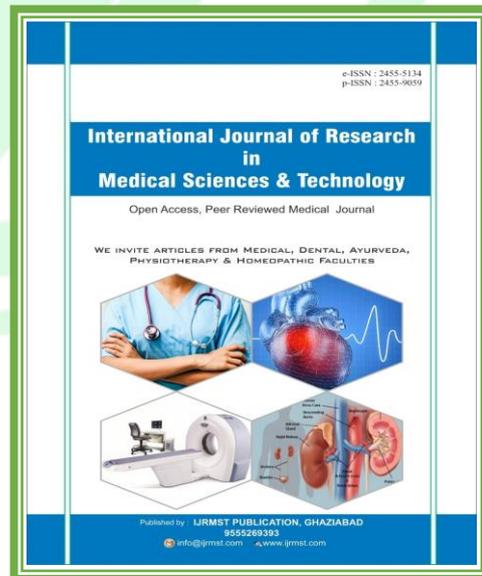
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ABSTRACT

Corona virus disease 19 (COVID 19) is a dreaded disease caused by Severe Acute Respiratory Syndrome corona virus 2(SARS CO V2). This wide spread pandemic had taken whole world into custody, alone in India as per data available on myGov (Govt of India website) more than 3 cr. people affected and 4 lac surplus fatalities reported till 17 September 2021. Post COVID complications are also severe and hospitalisation is needed in some cases. Despite all the prophylactic and therapeutic measures been taken to contain the disorder, strategies to cure it thoroughly without other complications, is still a challenge. Though vaccination drive against COVID 19 is running successfully in India, medicines to minimise the impact and sufferings because of COVID is indispensable. Approaching holistically based on *Dosha sidhanta* Ayurveda therapeutics had shown favourable results in COVID positive patients. Ayurveda believes that disease manifestation is the result of imbalanced *doshas*, if we become competent to manage and pacify those *doshas*, disease can be cured. *Vyadhipratyanik chikitsa* (disease and symptoms targeting therapy) and *Hetupratyanik chikitsa* (cause and dosha targeting therapy) are the modules that are approached in Ayurveda system. Reviewing the previous work done in this field and observing COVID19 on *Ayurveda* parameters, *Ayurveda* medicines and therapeutics have been anticipated here to heal the scar impacted by precarious COVID 19. Much more researches and clinical interventions are required to establish kind of effective therapy.

Keyword: COVID 19, *Ayurveda*, *Dosha*, *Rasayan*.

INTRODUCTION

Strange and unique demeanour of the COVID 19 pandemic has traumatised the humankind and crashed the health system across the world. India has witnessed more dangerous and grave second wave than first wave of this pandemic as amplified critical cases, quick deterioration in situation, scarce essential supplies, fatalities etc. Though second wave is almost over and human life is trying to be on the normal path again after the burdens

of health fear and imposed long lockdowns, threat is not over yet. Third wave also has been predicted. This virus has baffled scientists and doctors with new strains and variants. However, vaccines against SARS CO V2 had been developed and introduced, in form of mutants and variants with mystified outcomes COVID 19 duress is still there. Across the India different double and triple mutants of SARS CO V2 are circulating that are said to be more pathogenic than the previous

one. Other than being fatal, longer hospital stay, oxygen and life supporting system requirements, multiple organ involvement, Mucormycosis and other after effects and presence of discomfort and ailment even in post COVID recovery phase, shows the urgency of appropriate future strategies to identify, check and control the appalling COVID 19 conditions. In this critical condition holistic approach of *Ayurveda* therapeutics can be valuable as studies shown encouraging favourable results.

MATERIAL AND METHOD

Significant literatures including classical *Ayurveda Samhitas* commentaries, *Sangraha Granthas* and contemporary literature were searched. Reliable *Ayurveda* journals and Modern journals through electronic data base including Google scholar, Pub-Med, different health agencies websites, Google search etc. were searched to collect the relevant data. Ultimately conclusion has been depicted from comparison and rationale.

DISCUSSION

COVID 19 and *Ayurveda*: Spectacles of *Ayurveda* prospects COVID19 disease as the imbalance of body humours known as *Doshas* viz. *Vata dosha*, *Pitta Dosha* and *Kapha dosha* caused by existing exogenous factor Severe Acute Respiratory Syndrome corona virus 2 (SARS CO V 2). Novel COVID 19 disease explored on the scale of *Nidan panchak*, the diagnostic tool of *Ayurveda*, provides precise view of the disease and approach for accomplished management as well.

***Nidan Panchak* for COVID 19:** These are *Hetu*, *Purva rupa*, *Samprapti*, *Rupa* and *Upsaya*.

***Hetu* /Etiological factors:** COVID 19 is marked as highly contagious and communicable disorder caused by virus of coronaviridae family officially named as SARS Co-V 2 by International Committee on Taxonomy of Viruses. Deranged *doshas* due to exogenous virus is the main cause for this disease to develop. Chart 1 show *Hetu* for COVID 19



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Communicable and contagious Diseases communicating from one person to another, considered in Ayurveda as *Aupsargik Roga*^[1] embracing certain mode of transmission, that are very much appropriate in present perspective of COVID 19 pandemic. *Prasangat* (any type of mutual contact or surface contact), *Gatrasansparshat* (skin to skin touch), *Nihashwasat* (exhaled air- droplet infection), *Sahabhajana- sahashaiya- asana- vastra- malya- anulepanat* (sharing food, bed chair or seat, clothes, any kind of objects) are possible mode of transmission. WHO had also expressed its affirmation for transmission of SARS-CoV-2 through contact, droplet infection, airborne, fomite, faecal-oral and animal-to-human transmission.

Purva Rupa / Prodormal symptoms: Strange and bizarre behaving COVID 19 may present with different characteristics

in different persons. With estimated Incubation period of 2 to 14 days , in some persons it shows early sign in form of Fever (*santap*), chills, watering eye (*nayne sasre*) muscle pain (*anga marda*) , tiredness (*alasyam, jrimbhanam, gauravam, klam*)^[2] etc. It may be quiet and asymptomatic (*avyakt*) for few.

Samprapti/ Pathogenesis: Through any mode of transmission described earlier virus enters the body and start propagating in favourable environment. According to the impact of viral load homeostasis and equilibrium of *doshas* got disturbed causing imbalanced *doshas*. On the other hand body possessing *Ojas* and *Balas* (immunity and strength) like *Sahaj bala* i.e. Innate immunity, *Kalkrita* and *Yuktikrita bala* i.e. Acquired immunity, try to fight and combat the disturbing effects.. If the body is not strong enough to win the war virus keep on replicating causes

increase of viral load and ultimately doshas are so much deranged that result upsetting *dhatu*s, the building blocks of body. These vitiated doshas on reaching to a particular site via *srotas* (channels) produces symptoms according to *rog- rogi balabal*, if patient is stronger impact and symptoms are low and vice versa. Initial stage suggests vitiation of *Vata* and *Kapha* associated *Pitta dosha* and *srotas* involved is *Pranvah srotas* causing respiratory trouble symptoms. As disease progress *doshas* reached to *Amashya* causing more *Pitta dushti* and *Agni dushti* produces *Ama* and *Saam doshas* that are responsible for severity of symptoms and cytokine storm. Progression of the disease may involve multiple organ systems.

Rupa /Symptoms: Being a novel disease lesser extent of information is available regarding COVID 19. Moreover studies and researches are in proceeding to find the exact nature and course of the disorder. A lot of variations from person to person in symptoms and fate of the disease have been figured out, making it complex to score cardinal sign and symptoms. Furthermore the virus is on the track of mutation and keeps on changing into newer variant and strains, the reason why symptoms and virulence depicted by earlier strain differs. Though some common symptoms hit upon in larger mass are here summarised and conceptualised according to Ayurveda. [3, 4, 5]. (Table 1) (Table 2) (Table3)

Day by day phases of COVID 19	Stage	Appearance of symptoms	Ayurveda model			Dosha-awastha
			Symptoms	<i>Dhatugat jwara</i>	<i>Doshaj jwara</i>	
Initial stage of infection (0-4 days)	Mild	Most common symptoms: Fever fatigue cough Less common symptoms: Loss of taste or smell, Body ache Nasal congestion, Chest tightness Conjunctivitis	<i>Bahistap</i> <i>Dainyam</i> , <i>vijrimbhanam</i> , <i>sadnam</i> <i>Aruchi</i> <i>Angamarda</i> <i>Hridayyatha</i>	<i>RAS</i> <i>DHATUGAT</i> <i>JWARA</i>	<i>Visham-Sannipat jwara</i>	Vitiated <i>Vata</i> and <i>Kapha dosha</i>

		Sore throat, Headache, Nausea or vomiting, Diarrhoea, Chills Different types of	<i>Udwega</i> <i>Chardi</i>		
Progressive stage of infection (5 - 8 days)	Moderate	skin rash, dizziness	<i>Raktosna pidika,</i> <i>dah raag</i> <i>Bhrama, mad</i>	<i>RAKTA</i> <i>DHATU</i> <i>GAT JWARA</i>	
Peak phase of infection (9 – 13 days)	Severe	Sever cough Dyspnoea Vertigo Arthralgia Diarrhoea vomiting Coexisting illness	<i>Kasa</i> <i>Maha Swas</i> <i>Tamahpravesh</i> <i>Asthibheda</i> <i>Vireka</i> <i>Chardi</i>	<i>ASTHI-</i> <i>MAJJA GAT</i> <i>JWARA</i>	Aggravated <i>Vata</i> <i>Kapha</i> <i>dosha</i> along with <i>Pitta dosha</i>
	Critical and deceased	ARDS coagulopathy Acute cardiac injury Multiple organ failure		<i>DHATU PAK</i> <i>SANNIPATAJ JWARA</i>	<i>Vata</i> <i>Kapha and</i> <i>Pitta dosha</i>
Resolving (14 th day onwards)	Recovery post COVID				Mainly <i>Vata dosha</i>

Table 1: Different stages of COVID 19 with Ayurveda model

Type of <i>Sannipataj jwara</i>	Symptoms described	Symptoms in COVID 19 patients
<i>Vatapittolavan mand kapha sannipata jwara</i>	<i>Bhrama, pipasa, daha, gaurav</i>	Dizziness, thirst, temperature increased with burning sensation, heaviness.
<i>Vata kapholavan hina pitta sannipata jwara</i>	<i>Shaityam, Kasa, aruchi, tandra, pipasa, daha, rug vyatha.</i>	Chills, cough, tastelessness, dullness, thirst, burning sensation, pain and body ache
<i>Pitta kapholavan sannipata jwara</i>	<i>Chardi, shaityam, muhur daha muhur trishna, moha, asthi vedana.</i>	Vomit, chills, repeated burning and thirst, syncope, bone pain

Table 2: Symptoms according to *dosha awastha* of *sannipataj jwara* compared with symptoms of COVID 19

Type	Symptoms
<i>Ama jwara</i>	<p><i>Aruchi</i> (tastelessness),</p> <p><i>Avipak</i> (indigestion),</p> <p><i>Kshunnasho</i> (loss of appetite)</p> <p><i>Gurutvam udarsya</i> (heaviness)</p> <p><i>Tandra, alasya</i> (fatigue)</p> <p><i>Jwaraavisargibalawan</i> (continuous high fever),</p> <p><i>Lalapraseko hrillas</i> (nausea).</p>
<i>Niram jwara</i>	<p><i>Kshut</i> (Appetite normal).</p> <p><i>Kshamata</i> (weakness),</p> <p><i>laghutvam gatranam</i> (feeling light),</p> <p><i>jwarmardavam</i> (temperature downs),</p> <p><i>dosha pravritti</i> (diarrhoea),</p> <p><i>ashtaho</i> (8th day)</p>

Table 3 *Ama jwara* and *Niram jwara* of Ayurveda and symptoms observed with COVID 19

“Purusham purusham vikshya” [6]

Ayurveda promotes an individualized approach to understand the correlation of patient and disease and supports personalized therapy. Every individual is distinctive in means of their *Prakriti* (body type) decided by dosha constitution of body, Agni (metabolism and cellular energy), Sara and Bala (internal homeostasis, strength and immunity). As in COVID pandemic it has been observed that not only manifestation of disease differ in patients but also the outcome of

the same treatment given. Therefore individual curative scheme should be designed according to *Prakriti* of patient and disease, *Agni, Sara and Bala*. [7]

Prakriti assessment in COVID 19: Entire anatomical, physiological, and psychological province of an individual is decided by the dosha constitution of body named as *prakriti*. Nevertheless, pathological outcome depends on it as well. According to a study done on COVID 19 positive patients where validated instrument CCRAS *Prakriti*

assessment scale had been applied computed 27% patients of *Vata-Kapha Prakriti*, *Pitta-Kapha* 21%, *Kapha* 20%, *Vata* 13%, *Vata-Pitta* 11% *Sama* 4% and *Pitta* 3%.^[8] These results favour that *Vata kapha prakriti* individuals are more prone to this disorder. A CD marker expression (CD14, CD25 and CD56) supported immune-phenotyping study performed on different human *dosha prakritis* concluded that *Pitta prakriti* individuals exhibited elevated innate immune responses and were hypersensitive. *Kapha prakriti* individuals had higher expression of CD25 and CD56 exhibiting stable immune responses. Compared to *kapha prakriti* *Vata* predominant *prakriti* individuals showed compromised low potential immune responses.^[9] Another study on genome expression and biochemical correlates of *prakriti* reveals that *Vata prakriti* individuals exhibit a distinct down regulation of genes involved in response to biotic stimulus and inflammatory responses. Slowdown of immunomodulation is possible in *Vata prakriti*. On the contrary, *pitta prakriti* individuals display over-expression of genes related to immune response, more inflammation and hypersensitivity. *Kapha prakriti* individuals presented with an overall up-regulation of genes involved in cellular bio-synthesis and purine salvage

pathway, B and T cell receptor signalling pathways.^[10]

According to Ayurveda classic texts *Pitta dosha* has been notified to be responsible for any type of paak or inflammation Hence patients of *pitta prakriti* shall be more prone to 'cytokine storm' inflammation obsessed detrimental phase of immune response, that is observed in certain individuals infected with SARS-CoV-2 .

Upsaya/ Management:

Ayurveda approaches holistically towards disease and diseased. It advocates first to protect the health of a person (*swastasya swasthya rakshanam*) that implies healthy life style along with preventive measures and then, if required, cure for disease (*aturasya vikar prashmanam cha*). To fight the war against COVID 19 *Ayurveda* therapeutics can be a useful arsenal in this pandemic.

Satkriyakal: *Ayurveda* promotes disease management prior to appearance of symptoms that implies treatment initial from its incubation. Six stages have been mentioned for treatment purpose, as early the therapeutic innervations are implied in initial stage prognosis and recovery becomes more encouraging. Chart 2 shows the *satkriyakal* of COVID 19.

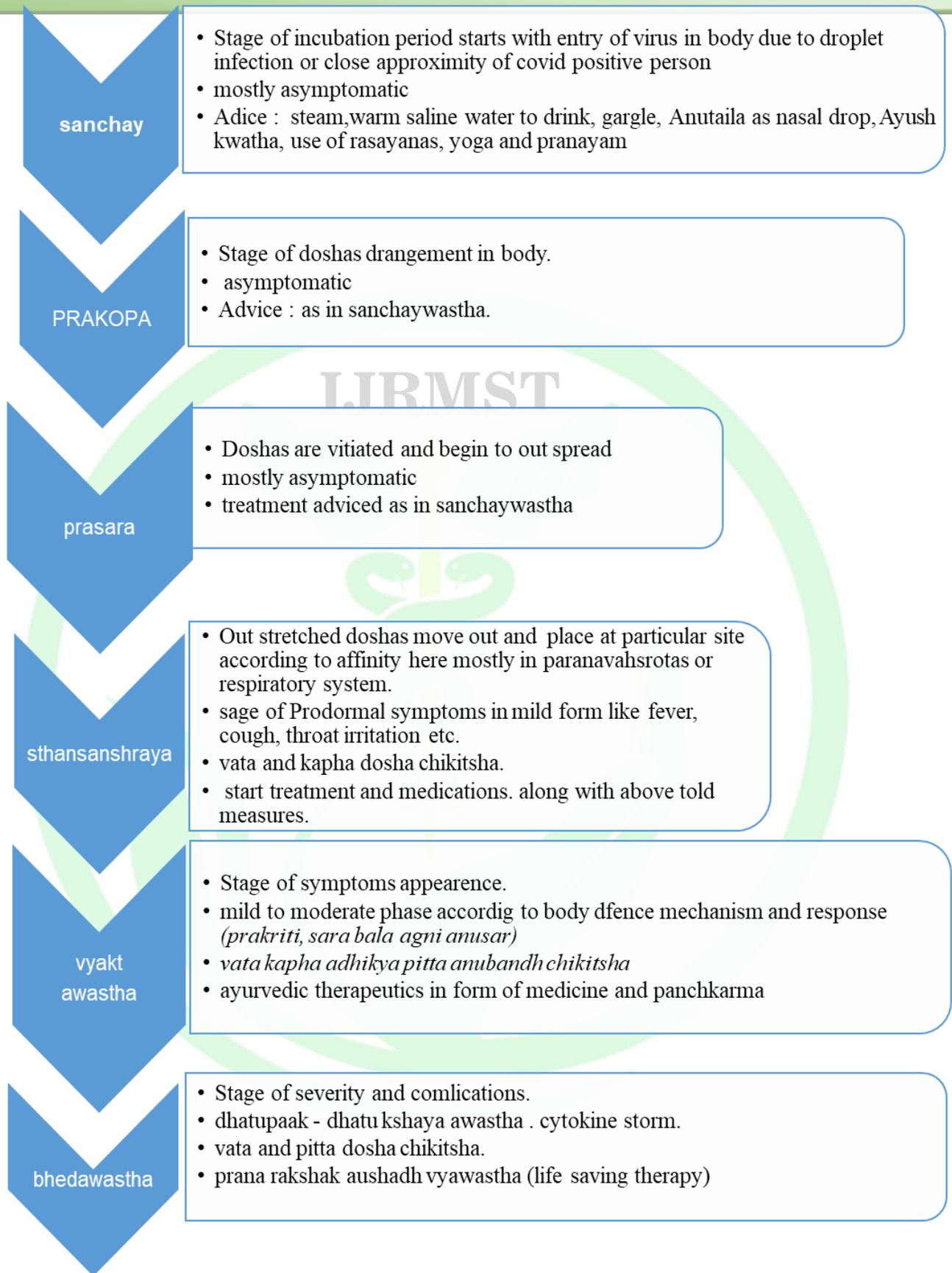


Chart 2

Treatment in *Ayurveda* is based on certain principles. We can summarised this as-

1. *Nidan parivarjanam* or Preventive measures: the first step against any disease to treat is to check the main cause. Here COVID 19 being a highly contagious disorder, so to follow the COVID protocol to prevent the spread of the disease is must.

- To follow COVID appropriate behaviour : Use of masks, maintain social distancing, frequent hand wash or use of hand sanitizers, avoidance to visit the crowded place

- Use of *Ayush Kwath*: AYUSH department recommends *Ayush kwath* [11] for immunoboosting and health promotion of masses in the wake of COVID 19. It consists of-

<i>Tulsi</i>	(<i>Ocimum</i>	<i>sanctum</i>)
Leaves	4 part	
<i>Marich</i>	(<i>Piper</i>	<i>nigrum</i>)
Fruit	1 part	
<i>Shunthi</i>	(<i>Zingiber</i>	<i>officinale</i>)
Rhizome	2 part	
<i>Dalchini</i>	(<i>Cinnamomum</i>	<i>zeylanicum</i>)
Stem bark	2 part	

- To follow the daily regime *Dincharya* [12] and seasonal regime *Ritucharya* [13] mentioned in *Ayurveda* Texts along with *Yoga* [14] and *Pranayama* to remain healthy.

- Ministry of AYUSH has recommended self-care guidelines for preventive health measures and boosting immunity like –

- ✓ To drink warm water, hot decoction, herbal tea and golden milk.

- ✓ Use of spices as turmeric, garlic, cumin coriander, cloves.

- ✓ *Nasya* or nasal application of sesame oil or ghee

- ✓ *Gandusha dharan* or oil pulling therapy that is keep sesame oil in mouth few minutes without drinking it.

- *Dhoopan karma* that is Fumigation for disinfection with various drugs. Few examples are *Dasang dhoopa*, *aparjita dhoopa*, *devdarvyadi dhoopa*, *neem* leaves etc. *Dhoopan karma* has been found antimicrobial, antifungal, antiviral and can prove effective for protection against the worldwide deadly pandemic disease COVID 19.[15]

2. *Shaman chikitsa/ Medication*: Drugs in various forms are used for the treatment of the disease. Prior to medication deranged *doshas* are watched for *Saam* or *Niram awastha* as per symptoms that again is the basic *Ayurveda* concept. If symptoms of *Saam dosha* are present first and foremost treatment is *Aampachan*.

A. *Aampachan* or *dosha-pachan* :

➤ *Ushna jala* (hot water) – Properties of *Ushna jala* are *Vata kapha har* (pacifier), *jwaraghna* (antipyretic), *Dipana-Pachan* (carminative), *srotassansodhak* (channels cleanser) [16]
Drinking hot water is also advised by the Ayush ministry to combat the effect of COVID 19.

➤ *Trikatu churna*: It helps in proper digestion and is found to be anti viral and immunomodulator by a study.[17]

➤ *Sadangpaniya*- made up of 6 drugs *musta* (*Cyperus rotundus*), *Parpatak* (*Fumaria indica*), *Usheer* (*Vetiveria zizanioides*), *Chandan* (santalinus), *Udichya* (*Pavonia odorata*), *Nagar* (*Zingiber officinale*). Due to *katu vipaka* it acts as *Aampachan*, *aamashayakleda nashak* which is useful in treatment of *Jwara*. [18]

This formulation helps not only to relieve burning sensation and fever but also aids the digestion and washes the toxins out.

➤ *Pippali churna* or *Vardhman Pippali Rasayan*- *Pippali* (*Piper longum*) having *Dipana*, *Pachan*, *Srotoshodhana* and *Rasayana* actions help in *Agnidipana*, *Aampachan* and the alleviation of *Ama* from the body. [19]

A clinical study done in mild and moderate COVID - 19 cases, at a tertiary care

integrative Medicine hospital in the National Capital Region, Gurgaon, India where outcomes evaluated in terms of the duration of hospital stay, the time to clinical recovery, long term impact of COVID - 19 treatment using quality of life questionnaire after 3 months of discharge. Formulation of *Guduchi* (*Tinospora cordifolia*) and *Pippali* (*Piper longum*) has reduced the length of hospital stay and improves the recovery time. Also reported general feeling of wellbeing and activity levels better in the 3 month follow-up post discharge. [20]

Treatment according to *dosha*, disease and symptoms: *Doshansh kalpana* novel concept of Ayurveda is to treat any type of disease according to *doshas* even the disease is unknown. First the symptoms are observed carefully and part of *doshas* that are vitiated is conceptualised. Since any disease or symptom are produced by imbalance of *doshas* only, so qualitatively imbalanced *doshas* are analysed and treatment is given accordingly to pacify *doshas* that ultimately eases symptoms and disease.

B. *Bala vardhan chikitsa* – inner strength or immunity is the key factor to fight any of health hazards. Ayurveda advocates use of *Rasayanas* in form of medicine that are rejuvenators, immunomodulators and antioxidant in nature or in

form of lifestyle modulations i.e. *Achar-Rasayan*. At first level it checks the causative factor virus and doshas to be accumulated in body, helps to prevent its replication and reduces viral load, gives

strength to body during and post recovery phase and promotes tissue regeneration.

The Ayurveda preparations that can be useful in the management of COVID 19 are summarised in Table 4

S.No.	Type of preparation	Name of medicine
1.	<i>Ekal- dravya</i> or single drugs	<i>Guduchi(Tinospora cordifolia)</i> , <i>Tulsi(Ocimum sanctum)</i> , <i>Ashwagandha (Withania somnifera)</i> , <i>Mulethi (Glycyrrhiza glabra)</i> , <i>Vasa (Adhatoda vasica)</i> , <i>Punarnava (Boerhavia diffusa)</i> , <i>Neem (Azadirachta indica)</i> , <i>Haridra (Curcuma longa)</i> .
2.	Compound drugs	
	a. Herbo- minerals	<i>Tribhuvan kirti Ras</i> , <i>Chandramrit Ras</i> , <i>Maha laxmi vilas Ras</i> , <i>Swas- kas Chintamani Ras</i> , <i>Swasari Ras</i> .
	b. <i>Kwath</i> (decoctions)	<i>Ayush kwath</i> , <i>Gojihwadi kwath</i> , <i>Shirishadi kwath</i> .
	c. <i>Vati</i> (Tablets)	<i>Giloya ghan vati</i> , <i>Mahasudarshan ghan vati</i> ,
	d. <i>Churna</i> (powder)	<i>Talisadi churna</i> . <i>Sitopladi churna</i> , <i>Shringyadi churna</i>
	d. <i>Asava-Arishta</i> (Syrup form)	<i>Kanakasava</i> , <i>Amritarishta</i> , <i>Drakshasava</i> ,
3.	Rasayan	<i>Amalaki(Phyllanthus emblica)</i> <i>Ashwagandha(Withania somnifera)</i> , <i>Agastya-Haritaki</i> , <i>Chywanprash</i> , <i>Medhya Rasayan – Mandukparni (centella asiatica)</i> <i>Brahmi (Bacopa monnieri)</i> , <i>Jatamansi (Nardostachys jatamansi)</i> , <i>Yashtimadhu(Glycyrrhiza glabra)</i> , <i>Achar- Rasayan</i> .

Giloya (Tinospora cordifolia), *Tulsi (Ocimum sanctum)* and *Ashwagandha*

(*Withania somnifera*): With these three medicinal plants a molecular docking

study was performed that illustrated six probable inhibitors against SARS-CoV-2 M^{pro} (Main protease). *Ashwagandha* with two inhibitors- Withanoside V [10.32 kcal/mol] and Somniferine [9.62 kcal/mol]), Giloya- one inhibitor- Tinocordiside [8.10 kcal/mol]), *Tulsi* with three inhibitors - Vicenin [8.97 kcal/mol], Isorientin 4'-O-glucoside 2''-O-p-hydroxybenzoate [8.55 kcal/mol] and Ursolic acid [8.52 kcal/mol]) were observed. That docked complexes were also found stable by molecular dynamic simulation study. [21] Another study stated that *Tulsi* containing flavonoids Orientin and Vicenin-1 was found to be effective against sars-cov-2 infection. [22]

Yashtimadhu (Glycyrrhiza glabra): Glycyrrhizin a poly saccharide of *Yashtimadhu* was found to block the viral replication by inhibiting the viral main protease M^{pro} in study. [23] Another study suggests Glycyrrhizic acid has the potential ability to inhibit respiratory virus replication. [24] In-vitro study proposes that glycyrrhizin displays anti-SARS-CoV2 effects as it inhibits viral adsorption and penetration. [25]

Vasa (Adhatoda vasica): a study tested the effect of whole aqueous extract of *Adhatoda vasica* (AV) in murine models of bleomycin induced pulmonary fibrosis, Cecum Ligation and Puncture (CLP)

induced sepsis, and siRNA induced hypoxia-thrombosis phenotype. The effect on lung of *Adhatoda vasica* treated mice was also studied at transcriptome level along with SARS CO V 2 replication. Oral administration AV extract eases increased airway inflammation, levels of transforming growth factor- β 1 (TGF- β 1), IL-6, HIF-1 α and improves the overall survival rates of mice. In the lung transcriptome down regulation of hypoxia, inflammation, TGF- β 1, and angiogenesis genes and up regulation of adaptive immunity-related genes was observed. It also reduced the viral load in Vero cells infected with SARS-CoV2. [26]

Punarnava (Boerhavia diffusa): various studies suggest the immunomodulatory effect by *Punarnava*. [27, 28] In a study various major active phyto-chemicals of the plant *Boerhavia diffusa* namely 2-3-4 beta-Ecdysone, Bioquercetin, Biorobin, Boeravinone J, Boerhavisterol, kaempferol, Liriodendrin, quercetin and trans-caftaric acid were docked to SARS-CoV-2 Main Protease using Molecular docking server. Three of them Biorobin, - 8.17 kcal/mol; Bioquercetin, - 7.97 kcal/mol; and Boerhavisterol, - 6.77 kcal/mol, had favourable docking energies and could potentially inhibit the function of the non structural protein of SARS COV 2. [29]

Neem (Azadirachta Indica): In a randomised controlled trial *Neem* is proposed as prophylactic drug against COVID 19.^[30]

Haridra (Curcuma longa): Curcumin a polyphenol obtained from the *Curcuma longa* is supposed to block virus entry on cells via S protein and ACE II receptor also can inhibit SARS-CoV-2 Mpro.^[31]

Shringyadi churna: *Karkatshringi, Pippali, Shunthi, Marich, Haritaki, Vibhitaki, Amalaki, Kantakari, Pushkarmula, Bharangi* and *pancha lavan* are the contents of this compound that is very effective in treatment of Bronchial Asthma.^[32] In an another study it is found to be effective in the treatment of COVID19 associated symptoms along with other medications.^[33]

Drakshasava: *Drakshasava* containing dried fruits of *Vitis vinifera* has proven potential against ongoing inflammatory process, underlying respiratory problems through inhibition of histamine release, cytokine production, improving lung functioning by counteracting allergen induced bronchial hyper responsiveness; and blocking the release of inflammatory cellular infiltration (eosinophils, lymphocytes, neutrophils) into airways.^[34]

Tribhuvankirti Ras: This potent drug shows antipyretic effect.^[35] This was also listed by government of Maharashtra in their advisory for COVID 19 guidelines.^[36]

Swas-Kasa Chintamani Ras: Clinical and metabolic markers based study of *Swas Kasa Chintamani Ras* had shown it to be curative for bronchial asthma.^[37]

Sadangpaniya, Guduchi, Saddharana churna, Kanakasavam and Indukantam kasaya was found efficient in case of COVID 19 with hypoxia.^[38]

Giloya ghan vati, Swasari Ras, Ashwagandha ghan vati, Tulsi ghan vati and *Anu taila* was suggested by a clinical trial that shows promising result.^[39]

3. *Panchakarma (Shodhan) chikitsa* : the concept of *Panchakarma* i.e. *Vaman Virechan, Basti karma – Anuvasan and asthapan, Nasya* , along with *purvakarma Snehan Swedan* , *Pachan* and *Paschat Sansarjan karma* is an unique and novel procedure performed in various disease condition gives miraculous results. As far as COVID 19 is concerned it may be helpful regarding its immunity enhancing potency and immunomodulation action when used prior to Rasayan therapy.^[40] Recovery phase and Post COVID management: Disease can progress in two forms-

1. *Dosha paak*: It shows that body is responding positively to the therapeutics and vitiated doshas are coming back to normalcy. This provides path for the recovery phase. This can be identified by the symptoms of “*laghuta jwara dehyo*” means fever subsides and there is feeling of well being as discomforts diminish, “*indriyanam cha vaimalyam*” that is sensory strength regained and health is restored. At this time as the body is weakened by disorder, *Agni* has not yet gained its all power and *Vata* dosha is on the upper side of the scale. To support the healing mechanism of body patient should be provided with *bala vardhak* immunity enhancer drugs that don't disturb the *Agni* also check for *Vata* dosha. *Ashwagandha* being a potent immunity enhancer can be a drug of choice in this period.

2. *Dhatu paak* –that shows the pathological hostile after effects of disease if it has not responded well to medications. Much tissue damage and suppuration may have started at this stage. This stage appears due to aggravation of uncontrolled *pitta dosha* along with imbalanced *Vata* and *kapha dosha*. Tissue damage again bump up *Vata dosha*. Symptoms as told – *Nidra nasho* (Insomnia), *hridi stambho* (tightness and constriction felt in chest), *vistambho* (stoppage and obstruction of all

excreta), *gaurav* (heaviness and uneasy feeling), *aruchi* (tastelessness), *arati* (anxiety and delirium), and *bala hani* ultimately strength immunity is lost and it may be fatal.

Post COVID Stage: Weakness, fatigue, body ache are most common symptoms present in post COVID stage. Management focuses here for reduction of weakness and lethargy and build-up Physical Strength is known as *Tarpan karma*. Diet should include Dal and soups made up with cereals, vegetable, pulses, green gram etc. Nutritional food, fresh fruits- vegetables, Milk, Ghee should be incorporated. *Rasayan* drugs like *Ashwagandha*, *Giloya*, *Shatavari*, *Tulsi*, *Amalaki*, *Agastya haritaki*, *Kushmand* *Avaleha* etc. can be used.

CONCLUSION

Ayurveda therapeutics has the potential to treat the COVID 19 condition effectively according to the vitiated *dosha*, *prakriti*, *agni* and *bala*. Following *Doshapratyanik chikitsha* that targets the vitiated *doshas*, *Vyadhipratyanik chikitsha* that stands for the utilisation of medicines targeting disease, symptoms and organ involved, *Rasayan chikitsha* uses different immunomodulators and immunity enhancer drugs, COVID 19 disease and post covid phase can be managed.

Nevertheless more studies, clinical based on accurate evaluation are required interventions and a solid future strategies to win this battle.

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SUMMARY

The wide spread pandemic of COVID 19 had traumatised the whole world. India also got badly affected with the first and second wave of this dreaded disease. Despite all the prophylactic and therapeutic measures been taken to contain this disorder, strategy to control it thoroughly without any complication is still need of these tougher times. Approaching holistically based on *Dosha sidhanta* Ayurveda therapeutics had shown favourable results in COVID positive patients. Ayurveda believes that disease manifestation is the result of imbalanced *doshas*, if we become competent to manage and pacify those *doshas*, disease can be cured. COVID 19 disease is here evaluated by the diagnostic tools named *Nidan Panchak*. Initial stage reveals the symptoms of aggravated Vata and Kapha Dosha, severe inflammatory response is caused by aggravated Pitta dosha. Later recovery phase shows sign and symptoms of vitiated Vata dosha. Strategically Ayurveda treatment can be planned on the parameters of vitiated doshas, prakriti, and condition of Agni, Bala, and Sara of the patient. Few Ayurveda drugs like Ashwagandha, Giloya, and Yashtimadhu etc. have offered promising results as per studies. Though more research work and clinical intervention is still needed, Ayurveda therapeutics that had given encouraging results, can be a powerful arsenal against war with COID 19.