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## Integrative approach in *Ayurveda* for COVID -19- A Review

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### ABSTRACT

Covid -19 outbreak is current frustrating entity to medical field and having dreadful impacts on global health system & economy. As standard line of treatment for this entity is not yet established & current statistics based on its impacts of high mortality rate is really discouraging. This situation demands for alternative search for its treatment in other science & also emphasizes over importance of its prevention in current situation by improving immunity. Basic aim of this paper is to search various treatment & preventative regimes in *Ayurveda* for management of different *Aoupasargic Roga* i.e. communicable diseases. Relevant literature regarding concept of communicable disease in *Ayurveda* was explored from available *Ayurvedic* compendium. Various references in *Ayurveda* shows that both preventaive & curative aspect of airborne communicable diseases can be fulfilled with the help of *Ayurveda*. By adopting *Ayurvedic* measures such as following proper *Dincharaya*, *Rutucharya*, *Sadvritta*, *Achara Rasayana*, *Panchakarma*, *Shaman Cikitsa* & *Rasayana*, *Yoga-pachara*, *Spiritual* therapies, *Dhoopana Karma*; both physical and mental health can be maintained & occurrence & spreading of such diseases can avoided. *Ayurveda* can give This is an encouraging development and a good initiative for the treatment.

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### INTRODUCTION

All global population is currently facing a very dreadful situation of global health emergency in the form COVID-19 which is imparting a great burden over all health care systems & economy of all

affected countries. WHO has declared it as a pandemic state. COVID-19 is a type of airborne disease which highly contagious & attacks over respiratory system. Though statics of these diseases shows its high incidence rate, high occurrence, fast replication & great extent of spreading nature & high mortality rate ; till date ,there is no any effective remedy in the form medicine or vaccine is developed in contemporary science to combat over this situation. Therefore , prevention remains the unique way to overcome such pandemic state. It is the need of hour to develop a safe and effective treatment approach in alternative science i.e. *Ayurveda* for management & prevention of this type of infection. The concept of prevention of disease is the unique specificity of *Ayurveda* which is elaborated over reams & reams of pages of *Ayurveda* in a very beautiful manner. It plays an imperative role in elaborating this concept of communicable diseases.

As prevention is the single option to fight with this dreadful situation & immunity of the individual plays key role against this fight. Because prolonged weakened immune system give rise a greater susceptibility to various infections especially related with respiratory system, herpes and fungal infections. It is a very disappointing thing that as a result of faulty & fast lifestyle in this era; improper diet, lack of exercise, stress, low quality of food grains, crowd population, unhygienic conditions & global warming ; overall health status of people become poor & chances of getting susceptible to such communicable diseases is also at high level. However, application of various preventative aspects of *Ayurveda* based on its fundamental principles like *Sadvrutta*, *Panchkarma*, *Dincharya*, *Rutucharya* successfully empowers the person to fight against this virus.

Through this paper, sincere efforts are done to compile certain preventive as well immune boosting modalities mentioned in the *Ayurvedic* sculptures.

A comprehensive literature search related with various clinical entities involved with *Pranavaha Srotas*(Respiratory System) i.e. disorders of *ShwAsanavaha Sansthana*, causative factors, various regimes for prevention as well as remedies for treatment for such ailments like COVID-19 was done using all available *Ayurvedic* compendium e.g. *Samhita* and *Nighantu*, full research articles from various databases such as Google scholars, PubMed, *Shodhaganga*, multiple P.G. & Ph.D. dissertations from different institutes till March 2020. For the study, several related articles were referred and an attempt has done to find out concerned information.

## OBSERVATIONS & RESULTS

Information collected after extensive review regarding various treatment regimes in *Ayurveda* which can be used integratively for prevention & management of COVID-19. However, this information was observed in scattered from under different entities such as holistic approach of lifestyle i.e. *Dincharya* & *Ritucharya*, importance of diet for immunity, *Vyayama* (Indoor & outdoor exercises), *Ayurvedic* Herbs, drugs & formulations according to symptomatic management & immunity boosting purpose, useful *Upakrama* (therapies), *Rasayana Chikitsa* (herbs & different formulations), *Yoga* practices (*Asanas*, meditation ), Spiritual aspect, *Dhoopana* therapy (different formulations & indications according to different *Acharyas*), *Ayurvedic* hand sanitizer and nasal spray with their useful drugs. These all concept will be elaborated one by

one as follows

There are ample references of various causative factors vitiating of *Pranavaha* & *Rasavaha Srotas* i.e. respiratory system & causative pathological factors causing *Vata-Kapahaja Jwara* described in various *Ayurvedic* compendium play important role in the pathogenesis of various airborne communicable diseases ([Charak Samhita of Agnivesha, 2017](#); [Vidyadhar and Dutt, 2017](#)). Symptoms of airborne communicable diseases such as COVID-19 have similarity with symptoms of *Aoupasargic Roga*(diseases which are communicable in nature), *Janpadohwanasa* in *Ayurveda* & *Vata-Kapahaja Jwara* which are caused due to vitiation of some factors such as air, water, location and seasons ([Trikamaji, 2011](#); [Sharma and Kalpasthana, 2005](#); [Sharma, 2005](#); [Kaishika and Madhavnidan, 2005](#)).

## Treatment strategies in *Ayurveda*

As transmission of Corona virus is affected by multiple factors, including environmental factor, host behavior, host defense mechanisms (the body with weakened immune system are more prone) , and virus infectivity. All these factors should be taken into consideration while deciding prevention & treatment plan of such conditions. Among them, only host behavior, host defense mechanisms lies within boundaries of human efforts. Three types of strategies i.e. *Daivayayapashraya*, *Yuktivayapashraya* & *Satavavajaya* are advised by Ancient *Acharyas* for management of such communicable diseases under their different components. However, it is a noteworthy thing that most strategies among them are preventive in nature.

## Concept of Holistic lifestyle i.e. *Dincharya* & *Ritucharya*

In *Ayurveda*, maintenance of good health of mankind is explored by balancing dynamic equation between man and his surrounding environment. As immunity plays an important role in communicable diseases & it can be maintained by adopting healthy lifestyle with the help of *Dincharya* & *Ritucharya* (Day & seasonal regime), exercise, proper diet. As there occurs specific physiological changes in body due to various diurnal & seasonal variation, significance of concept of adoption of both *Dincharya* & *Ritucharya* remains imperative to maintain equilibrium between internal environment (human body) & external factors (environment) by achieving harmony between *Tridosha* in the body.

Nowadays, severe disturbances in environmental pattern are occurred due to global warning & *Mithya Yoga* of *Kala* e.g. there occurs heavy raining in sum-

mer days i.e. called as *Kala Vaishymya* which badly affects over physiology of human body also. So it is very necessary to maintain harmony between *Tridosha* in body and in order to adopt it, becomes necessary to give emphasis over intake of proper diet. Appropriate diet & lifestyle should be adopted in such situation which is described in *Rutu Sandhi Kala*.

In such scenario, it becomes a need of hour to give specific attentions & to follow regulations strictly in context of specific diet, lifestyle modifications & useful procedures for detoxification which are recommended in *Dinacharya & Rutucharya*. As healthy diet is an important part of supporting a strong immune system, so planning of diet in covid Pandemic serves greater role. Considering the current need of proper diet planning, following diet suggestions based on the fundamental principles of *Ayurveda* are given as follows.

1. Maintain optimum hydration of body by drinking plenty of water to help body to eliminate waste metabolic products from body through urine & sweat which helps to build good immunity.
2. Intake of balanced, healthy food in proper quantity at regular interval as per narrated in *Ritucharya*.
3. Avoid Food which is heavy in digestion as well as high in salt, sugar and fats.
4. Prefer antioxidant herbs in food and *laghu aahara* e.g. Moong dal khichdi, Jowar roti, Cucumber, Cereals, pulses, whole grains, legumes, nuts.
5. Judicious use of Spices such as ginger, garlic, turmeric, and capsaicin (from chili peppers) while preparation of curry, soups, stews, stir-frys, or salad dressings since such spices have multiple medicinal benefits of improvement in digestive health by kindling the *agni* & give tough fight against cold and infections by their properties e.g. antibiotic, anti-inflammatory and anti oxidant.
6. Erratic eating should be avoided

Some home remedies such as herbal tea / decoction (prepared from *Tulsi* (Basil), *Dalchini* (Cinnamon), *Kalimirch* (Black pepper), *Shunthi* (Dry Ginger) and *Munakka* (Raisin) advised by *Bhaishajya Ratnavali*) & Milk medicated with Turmeric in order to improve immunity in pandemic state of COVID -19 can be suggested in addition to above recommendations.

### **Vyayama (Indoor & outdoor exercises)**

*Vyayama* is the important aspect of *Dinacharya & Rutucharya*. It is highly appreciated to maintain physical fitness or strength (*Balavardhakala*), to improve immunity, to increase in appetite (*Agnivardhak*) to make person engaged, cheerful (*Manasprasankar*) & enthusiastic. As in lock down period of COVID-19 pandemic, most of the persons are at home or doing work from home, so physical activity get reduced and as a result of that, multiple complaints such as indigestion, constipation, loss of appetite regarding digestive system get started. To overcome all these complaints, proper indoor exercise is the good treatment of choice. Due to regular exercise, Increased status of *Agnidipti* helps in increase in food intake with proper digestion and directly helps to provide proper nourishment to *uttar-dhatu* and so helps in increasing the immunity which is a key factor to fight against the Corona Virus.

Indoor exercises such as *Surya Namaskara & Pranayama* helps to improve in proper breathing techniques by providing optimum fresh air to lungs and increase oxygen supply to all the organs & helps to stimulate overall mechanism of the body. However, selection of type & duration of exercise should be decided on the basis of physical strength of person which may varies from person to person and season. Excessive strenuous exercise with prolonged duration is strictly contraindicated by ancient *Acharya* also, It should be done till appearance of sweating over forehead.

### **Role of Ayurvedic Herbs & Drugs**

It a type of *Yuktivyapashraya Chikitsa* till date; no any drug has specific claim to treat COVID 19, therefore, exploration of traditional remedies are highly needed in current scenario. *Vata-kapha Jwaraghna Chikitsa* is expected here in the form of *Amapachaaka & Jwaraghna & Vatanulomana Chikitsa*. Various formulations in *Shwasa, Kasa, Hikka, Rajyakshma* can be used here as per nature of symptoms & type of pathology involved. However, constitution, *Sharir, Nidana, Desha, Kala* of person patient should be taken in to consideration before administration of these drugs.

Herbs such, *Ashwagandha, Avla, Ashwatha, Brahmi, Dhanyak, Rason, Guduchi, Haridra, Kutaki, Kantakari, Marich, Nimba, Pudina, Pippali, Shalla, Sunthi, Tulsi, Twak, Vasa, Sunthi* are recommended by *Ayurveda* for ailments like COVID -19 which are originated from *Vata & Kapha*. All these drugs are Antioxidants, anti-inflammatory, Immunomodulator, antiviral, antimicrobial & *Vatakaphahar* in nature.

Regular consumption of water medicated with *Sunthi, Tulasi, Dhanyaka, Haridra, Rasona* can be advised to improve digestion & to boost immunity. Anti-inflammatory, antibacterial, antiseptic & antioxidants properties of above drugs are also useful to fortify digestive tract, relieve nausea, bloating and constipation. Milk medicated with herbs such as *Rashon Ksheerpaka, Pippali Ksheerpaka* are highly useful in fever.

As *Haritaki (Terminalia chebula)* is immuno modulator & *Rasayan* drug, therefore; administration of *Haritaki* is advised by Acharya in all seasons with specific *Anupana* under the head of *Rutu Haritaki* to maintain health. Treatment which can be advised according to specific type of symptoms of communicable diseases are mentioned in Table 1 & various formulations useful in such diseases are narrated in Table 2.

### Upakrama (Therapies)

*Upakrama* (different putative therapies) are integral part of *Apakarshana Chikitsa* i.e. to remove the source of infection completely with breaking of main root of pathology. As *Apakarshana Chikitsa* is mentioned by Acharya Charaka for management of *Janpadodhwansa Vyadhi*. Rational & judicious use of *Karma Panchavidham* i.e. *Panchakarma* in the form of emesis, purgation, enema, nasal instillation and *Rasayana Chikitsa* according to season at regular interval yearly are strongly recommended by Acharya Charak, *Sushrut* and *Vagbhaa* in the context of *Janpadodhwansa Vyadhi* or pandemic situation such as COVID-19 for prevention purpose.

Even seasonal application of these different putative therapy prior *Rasayana* is considered as mandatory protocol in order to yield optimum benefits of *Rasayana* therapy which is the main tool to maintain immunity (*Atrideva et al., 2009*). For this purpose, *Haritakyadi Yoga* i.e. combination of *Haritaki (Terminalia chebula)*, *Saindhava lavana (rock salt)*, *Amalaki (Emblicae officinalis)*, *Guda (jiggery)*, *Vacha (Acorus calamus)*, *Vidanga (Embelia ribes)*, *Haridra (Turmeric)*, *Pippali (Piper longum)*, *Shunti (Ginger)* is advised by Acharya Charaka. Different types of *Upakrama* or procedures useful for various symptoms in COVID-19 are given in Table 3 with their drugs & their utility.

### Concept of Rasayana

*Rasayana* is the specific form of treatment in *Ayurveda* which works on fundamental aspect of organs i.e. *Dhatu*, *Agni* and *Srotas* by nourishing *Rasaraktadi Dhatus* (the seven basic tissues) with the help of its properties such as Anti-ageing, immunity boosters or Immunomodulator, Adap-

togenic (regulator which increases the ability of an organism to adapt to environmental factors and to avoid damage from such factors), Antioxidant, nootropic, antistress properties especially described by Charak (*Paradkar et al., 2009*). These common properties of *Rasayan* drugs are vividly explained through the *Ayurvedic* literature (*Tripathi and Dutt, 2005*).

Main intension of *Rasayana* therapy which is beautifully elaborated in *Ashtang Ayurveda* reaffirms its use to keep intact healthy status of body by enhancing natural defence system. Rejuvenation and Revitalization actions of the *Rasayana* drugs to enhance immune system as well to increase longevity of life is very well described across various *Ayurvedic* scriptures. Regular healthy practices of *Rasayana* can be applied in day to day clinical practice to offer an effective tool for the prevention & management of communicable diseases.

Diet (*Ahara*), Medicines (*Aushadha*) & behavioral therapy (*Achara Rasayana*) are three basic pillars of this *Rasayana* therapy. All of these perform their action of immunity building by doing purification of body and mind. Among different types of *Rasayana*, *Vatatapik Rasayana* can be used for treatment of communicable disease according to Acharya Charaka since such *Rasayan* are easy for application & having minimal restrictions. Among 4 types of *Kamyas Rasayana* given by Charaka, *Pranakamya* & *Ayushkamya* are useful for covid pandemic. The role of *Rasayana* in communicable diseases can be justified by *Sharangadhara* who quoted that *Rasayana* is useful in the prevention of diseases due to old age. Various *Rasayana Yogas* & *Ayurvedic* herbs useful for COVID-19 are described in Table 4.

### Behavioural therapy in Rasayana (Achara Rasayan)

*Sadvrutta* i.e. code of conduct is the essential part of *Dincharya* & a type of *Achara Rasayana*. It plays crucial in prevention of communicable diseases. *Achara Rasayana* which is a type of *Rasayan* therapy i.e. specific code of conduct is beautifully expressed by Charaka in the form of regular truthful talk, avoidance of addiction such as alcohol, smoking etc., maintenance of celibacy, maintenance of calmness of mind by indulging itself in creative activities, pleasant talking, maintenance of hygiene by avoiding eating in unclean utensil or avoid eat dirty & stale meal served by the unclean food server at unhygienic; crowded & public like streets, places of worship, near water sources, hospitals, parks, schools etc., regular bathing daily twice, regular cutting of hairs & shaving, wearing full clean clothes, carrying of auspicious herbs and gems on hand,



applying daily oil to head, ear, nose feet (*Abhyanga*), purifying home with *Dhoopana*, avoid scraping, brooming roof (Sharma *et al.*, 2005), stability in thoughts, straight forward actions with courage, regular indulging in charity works, application of regular practice of penance, respecting older persons, maintenance of self control, following balanced & healthy diet regime by preventing incompatible food.

*Sadvritta* works more widely and effectively than immunization with respect to prevention from communicable diseases as it is cheap and easy to follow. Physical health by procedure called as *Achar Rasayan* which gives all qualities of *rasayan*. Any person can prevent himself from disease & attain good health by applying *sadvritta* related with *Ahara*, *Vyavyay* & hygiene. Table 5 shows for *Rasayan* for COVID-19.

### Role of Yoga practices

*Yoga* practices are a non-pharmacological form of preventative treatment which reduces negative onslaught of stress which has bad impact on the immune system and decreases susceptibility after prolonged exposure to causative factors. It comprises various practices such as *Asana* (physical postures) & *Pranyama* (controlled and slow breathing), *Yama* and *Niyama* (part of *Sadvritta*), *Shat karma* (cleansing techniques), relaxation techniques of meditation & sermons on *Yoga* philosophy. Various useful *Asanas* useful for COVID-19 with their possible therapeutic effects are given in Table 6.

Among different *Asanas*, some *Asanas* offers immunity, improves lungs function or have dual effects as follows so should be practiced on daily basis. These special techniques of breathing & *Surya Namaskara* increases immunity & strengthened the *Pranavaha Strotas* (respiratory system), *Rasvaha Strotas* (lymphatic system), potentiate physical strength to maintain the *Ojas*, *Teja*, *Prana*, increases the Lung Compliance and also improves the cardiac output. It induces all these effects by balancing between body & mind. It can be effectively used as mind body medicine. It is an eternal and holistic model of health and healing of body very fastly. Various *Yogic* practices in the form of *Pranayama* & *Suryanamaskara*, *Asana* plays very crucial to promote and improve respiratory and cardiovascular function as well their immunity. Due to regular habit of such exercises, there is increase in vigor & vitality to prevent such infection or if caused then to avoid complications such as respiratory distress. These different *Yoga Practices* stimulates the Digestive fire & metabolism of the body & mental strength to fight against different diseases.

Considering these multiple benefits of *Yoga* therapy, different practices of *Yoga* can be considered as a complementary therapy to manage such ailments during quarantine to improve immunity & to keep persons engaged & refreshing. It can be applied in period of corona pandemic as indoor activity to prevent or reduce physical or mental stress. These are also helpful to maintain physical fitness during lockdown period.

### Spiritual aspect for COVID -19 according to Ayurveda

Spiritual aspect of *Ayurveda* for communicable diseases again reflects through *Satwavidya Chikitsa* & *Daivavyapashraya Chikitsa* which are described by *Acharya Charaka* as one of modality in *Janpadodhwnasa Vyadhi* (Kashinath and Chaturvedi, 2009; Kaashinath and Chaturvedi, 2009).

*Devaviprasya*, this is also a *Sukshma Chikitsa* having nonpharmacological action which includes *Homa*, *Japa*, *Doom Doom Masvanadyay* e.g. Clapping over Marma Of Hands (Heart, Kidney, Lungs to convey impulse efficiently to inner vital organs). *Homa*, *Havana*, *Yagya* i.e. medicated fumigation /*Dhoopana* are vividly explained in *Yajurveda* & *Atharvaveda*. Practices of *Dhoopana* twice a day that is at morning and evening to attain the spiritual enlightenment mental peace, purification of mind and environment is advocated in *Yajurveda* (Ahlawat and Sharma, 2019; Anataram, 2018). In *Durga Sapatashati* written by *Markadeya Rushi*, a whole chapter is allotted to describe a type positive energy to destroy causative factors of communicable diseases which have multiplication tendency & spreading nature. A whole chapter is devoted for *Havana Vidhi* by *Harita* & *Sanidvarga* & various aromatic drugs are described in it. Specific mantras for specific drugs for specific *Nakshatra* are also mentioned (Harihara, 2009).

Mantra especially *Rama Rakshastrotra* given by *Kaushik Rishi*, *Gayatrijwara Stotra*, *Purusha Sukta*, *Vishnu Shastra*. According to *Acharya Charaka Mantra Chikitsa* is very beneficial in these conditions this is also accepted by the modern science as a raga therapy. Regular Citation of *Japa* is mentioned as a part of *Achar Rasayana* by *Charaka Samhita* for purification of mind, to develop positive energy & to strengthen mental stability.

### Concept of Dhoopana

*Dhoopana* is the procedure nothing but fumigation with *Ayurvedic* herbs to prevent or reduce contamination of air. Main role of *Dhoopana* is to check over the spreading nature of pathogens & it is chiefly indicated for sterilization or fumigation of operation theatres, labour theatres.

**Table 1: Treatment advised according to specific type of symptoms of communicable diseases**

S. N.	Symptom	Formulations
1	Fever(Jwara)	Mahasudharshan Kwath, Mahamrityunjaya Rasa, Suvarna Suthashekhar Talisadichurna 2g, Abhrakbhasma 10mg, Shringibhasma 20mg. Guduchyadi ghrita 5 to 10gms twice a day with hot milk. Jivantyadileha 5 to 10 gms twice a day. Hemagarbha pottali rasa 125 to 250 mg with warm milk twice a day. (Babu and Suresh, 2017) Tulsi Swarasa with Marich powder Haritakyadi Ghrita in Jirna Jwara (Deshpande, 2005)
2	Cold ( ratishya)	Lakmivilas Rasa Anutaila and Goghrita for Pratimarsha or Shodhana Nasya
3	Cough(Kasa)	Shwashkuthar Rasa, Shitopaladi Churna ,Ajmoda for Dhumapana Powder of Marich with honey For expectoration, Talisadi 3g +Yashimadhuchurna 3g + Tankan1g+ Pravalbhasma500 mg + 250mg of Shringi Bhasma (Babu and Suresh, 2017)
4	Malaavrodh(Constipation)	Lavang (Clove) powder +Sita(Sharkara)+honey Kwath( Decoction) of Haritaki(Curcuma longa Linn.), Pippali( Piper longum), Aragvadha( Aasia fistula), Kutaki(Picrorhiza kurroo), Musta(Cyperous rotundus).

**Table 2: Various Formulations useful in communicable diseases**

S.N.	Choorna	Qwath	Avaleha	Vati	Ghrita	Asava/ Arishta	Rasakalpa
1	Talisadi	Maha - sudharshan	Vasaavaleha	Sansha - manivati	Kantakari	Vasa Arishta,	Laxmivilas Rsa
2	Yashimadhu	Haridradi	Daurbalyadi	-	Trusnadi	Kankasawa	Abhrakbhasma
3	Guduchi	Katutrikadik	Chitraka Haritaki	-	Dashamula	-	Shringibhasma
4	Shatyadi	Aadivasikashya	Jivantyadileha	-	Pippalyadi	-	Praval Bhasma
5	Muktadya	-	Dhatryavaleha	-	Guduchyadi	-	Shilajit
6	Haridradi	-	Kushmand Avleha	-	Haritakaydi	-	Tanka bhasma
7	Sunthi	-	Agashti Haritaki	-	-	-	Hemagarbhapottali
8	Pushkarmula	-	-	-	-	-	Mahamrityunjaya
9	Kantakari	-	-	-	-	-	SuvarnSootshekhara
10	Sitopaladi	-	-	-	-	-	Laxmi Vilas Rasa
11	Gandharvharitaki	-	-	-	-	-	-

**Table 3: Upakrama (Therapies) useful in COVID -19**

S.N.	Type of Upakrama	Drugs	Utility/Role
1	Vamana	Sadya Vamana with 1. Pippali (Piper longum)+Saindhav+Madhu (Vidyadhar and Dutt, 2017) 2. Yas-timadhu Phanta	To clean channels of Kapha & normalize gati of Vata in the body.
2	Mrudu Virechana	Powder with Aruna Trivrit Mula especially in paediatric population (Vidyadhar and Dutt, 2017)	Constipation induced by fever
3	Nasya	1. Pratimarshana Nasya/Pradhamana /Shodhana Nasya 2. Pratimarshana Nasya with 2 drops of tila taila/Anutaila /Cow ghee/Shadbindu Taila /Panchedriyewardhana Taila 3. Shodhana Nasya with Lasuna (Allium sativum), Palandu (Alliumcepa), Galasaluka (Daucus carota) (Vidyadhar and Dutt, 2017)	1. Pratimarsha Nasya(Simple & short process)having has both Snehana (oleation) and Shodhana (purifying) properties. & it is important componenets of Dinacharya 2. Protects the nasal mucosa by coating with layer of drug to ban over the entry of pathogens or foreign bodies into respiratory system. 3. Helps to strengthen mucus membrane
4	Nadi Sweda/ Steam inhalation	1. Steam inhalation with fresh pudina leaves with Ajwain 2. Dashmoola qwath +Saindhava	1. Induces liquification of stagnated kapha & helps to eliminate vitiated Kapha from respiratory channels 2. Subsides symptoms of respiratory congestion or respiratory distress due to stagnation of vitiated Kapha/mucous
5	Gandusha /Kaval	1. Gargling with lukewarm water medicated with Triphala+Haridra powder+Saindhava (daily thrice) 2. Sneha Gandusha in Dinacharya 3. For Kapha predominant conitions,use of Katu, Amla, Lavana, Rooksha, and Ushna Gunatmak drug should be used	1. Helps to relive sore throat,dysphagia 2. Helps to remove vitiated Kapha & to inhance circulation of oral cavity & the oral mucosa.
6	Dhumpana	Inhalation of medicated fumes of with a Varti made from the paste of garlic , Turmeric,Vacha (Acorus calamus) ,Pippali ,Tulsi (Ocimum sanctum), turmeric Curcuma longa), Guggulu(Commiphora wightii) , curry leaves , Nimba,, Patra, Eran-damula, Laksha, Manahshila, Devadaru, Haritala, Guduchi, Karkatshringi, Hingu, Inguli, Kantakari, Twak, Patol, Apamarga And Jatamansi Added With Cow ghee through nose & mouth (Babu and Suresh, 2017)	1. All recommended drugs are Kru-mighna (Germicidal, antimicrobial, antihelmenthic, disinfective ) in nature 2. Helps to clean the oral cavity and respiratory tract
7	Abhyanga	Til taila / Any Taila according to seasons,type of ailment & constitution of person	1. It is not recommended in active phase of disease 2. However it is essential component of Dinacharya to induce good physical strength & immunity by norishing tissues& by improving blood circulation to various tissues & organs

It is also indicated in clinical conditions which are transmitted by sneezing, breathing, talking, coughing, raising of dust, spraying of liquid, toilet flushing or any activities which generate aerosol particles or droplets (Hart *et al.*, 2007). As airborne pollutants could even act as a carrier of the new coronavirus and allow it to survive in the air attached to particulates for over 72 hours at temperatures of 22–25°C and relative humidity of 40–50% (Hall *et al.*, 1980).

As microbes or pathogens have generally microscopic structures & these are narrated under terms of *Bhuta, Graha, Jantu Or Krimi*. *Dhoopana* is the ideal regime to kill such pathogens & to prevent spreading of infectious diseases especially COVID-19 originated from them through contaminated air. The concept of *Dhoopana* is very well elaborated by various *Acharyas* especially By *Sushruta* & *Kashyapa*. *Acharya Vagbhata* has mentioned *Dhupan Karma* (fumigation) of *Vastra, Shayya* in *Sutrasthana*. *Acharya Kashyapa* has mentioned 40 *Dhupanyogas* in *Dhupakalpaadhyaya*. Wide range of drugs are provided by them for different preventative & curative aspect with their exclusive methods of preparation of *Dhupa*. In *Athravaveda*, complete *Sukta* is devoted for *Rakshoghana Karma*. There are ample references of this *Dhoopana karma* with its detail narration under heads as types, indications, instruments & various drugs useful for it (Hemraj, 2013).

Main actions & properties of *Dhoopan Dravya* are antimicrobial, antifungal, antiviral. Fumigation with the help of these drugs destroys worms & germs in environment.

In current scenario of dreadful outbreak, *Gomaya* (Cow dung & *Vacha* with *Ghrta* or *Ghee* along with *Neema Patra* should be added to do *Dhoopana* can be done due to their easy availability to fumigate places where prevention of the entry of pathogens is expected. Since *Ghee* used in *Dhoopana Yogas* helps in rapid combustion of cellulose of herbs and keeps the fire alight. As Antimicrobial (*Bacillus* and *Pseudomonas*) and Disinfectant Properties of *Gomaya* are proved by (Girija, 2013) that *gomay* showed the positive response in mycelia growth of plants pathogenic fungi which is also found as effective as penicillin and streptomycin in as per studies. *Vacha* has itself famous for its antimicrobial property. Useful different *Dhoopana Yogas* for sterilization of different articles with their ingredients according to different *Acharyas* are described in Table 7.

### Concept of Ayurvedic hand sanitizer and nasal spray

Maintenance of Cleanliness is important com-

ponent of *Achara Rasayana* to achieve sound status of health (Anant and Damodar, 1980). As hand is a type of *Karmendriya Grahan* or *Dharana Karma* (Tripathi Brahmanand). & very vulnerable to carry primary infection. *Ayurvedic* hand sanitizer and nasal spray are primarily intended to prevent primary mode of transmission of microbes and various nosocomial infections (Ravi *et al.*, 2005). As transmission of COVID-19 takes place mainly through respiratory droplets or contact, it performs leading role to avoid exposure. It proves the important role of hand hygiene. Standard recommendations to prevent the spread of COVID-19 include frequent cleaning of hands using sanitizers. This concept can be launched with preparation *Ayurvedic* sanitizers in the form of *qwath* (decoction), *Phanta* or *Arka Kalpana* with some *Ayurvedic* herbs having properties such as *Rakshoghna, Krumighna, Vishaghna, Kandughna, Kushthagha Dahaprashana* (Vidyadhar and Dutt, 2017).

*Nimba* (*Azadirachta Indica*), *Tulsi* (*Ocimum Sanctum*) *Jambira, Nimbu* (*Citrus Limon*), *Haridra, Daruharidra, Mahanimb, Vidang, Karanja, Nirgundi, Shirisha, Guduchi, Triphala, Aaraghwadh, Bilva, Kapithha, Jatamamsi, Arka, Nirmali, Sariva, Lavanga, Ghruta Kumari, Audumbar Saal* have *Krumighna, Vishaghna, Kushthagha, Kandughna* properties. Therefore, such drugs are highly recommended for the preparation of these *Ayurvedic* sanitizers. *Gomutra Ark* is added to increase the antimicrobial quality of this sanitizer.

Breathlessness, sneezing, nasal congestion, runny nose, sore throat etc are common complaints in COVID-19, Nasal Spray is useful for that. Drugs having properties of antiasthmatic, antihistamine, antiallergic Antibacterial and bronchodilator, Antitussive & muscle relaxant effects can be used for the preparation of same. In addition to these, drugs advised in respiratory ailments such *Shwasa, Kasa, Hikka* or herbs useful in Pulmonary Eosinophilia can be used for preparation of Herbal sanitizers & *Ayurvedic* nasal Sprasy.

### DISCUSSION

The concept of communicable disease along with the mode of spread has been elaborated in a beautiful manner by *Acharya Charaka* & *Sushruta* by stating different types of *Krumi* (Worm), *Jantu* (Insect), *Jantu* (Virus), *Graha, Raksha* (microscopic parasites) or vitiation of *Air* (*Vayu*), *Water* (*Jala*), *Time* (*Kala*) & *Region* (*Desha*) as causative factors for developing various communicable diseases like COVID-19.

Management approach of airborne communicable diseases like COVID-19 in modern science compro-



**Table 4: Various Rasayan Yogas for COVID-19**

S.N.	Name of Yoga	Specific Strotas related mode of action
1	Pippalirasayan// Vardhaman Pippali Rasayan	Pranavahasrotas, Rasavaha Srotas Naimittik Rasayana(Charaka) Helps in prevention from Kasa, Shwasa, Rajyakshma, Prameha, Arsha, Hikka, Pleeharoha
2	Triphala Rasayana (cha.su. 1/62-74)	Immunnomodulator, Antioxidant in nature
3	Chyavanprasha 10gm in the morning.(cha.su. 1/62-74)	RasavahaSrotas, Pranavahastrotas, Annavaha Srotas Immunnomodulator, Antooxidants, Adaptogenic, aphrodisiacs Increases strength of respiratory system
4	Brahma Rasayana	Notropic Rasayan
5	Amalika Rasayana	Immunnomodulator
6	Louha Rasayana	Rasavaha & Rakatavaha Srotas Hematinic in nature
7	Agastya Haritaki Rasayana	Pranavaha Srotas Naimittik Rasayana(Charaka) antitussive, mucolytic, anti-inflammatory , antiallergic improves respiratory strength , reduces chest congestion
8	Amruta Bhallataka Rasayana	RasavahaSrotas
9	Madhu Snuhi Rasayana	RaktaVaha Srotas
10	Shilajatu Rasayana	MedovahaSrotas
11	Chausastha Prahari Pippali	Pranavaha Srotas & Rasavaha Srotas Increases immunity and gives strength to alveoli Improves lung capacity and detoxify lungs

mises mainly the controlling the source of infection & interruption of the route of transmission with different strategies as Immunization & conservative management. Among them, mainly prevention & specific treatment(rational use o appropriate antibiotics or antivirals, proper ventilation, shifting to room which have special air handling system are recommended

*Ayurveda* has greatly appreciated for prevention of any disease rather than its treatment. However, in *Ayurveda*, treatment strategies of such disorders are established on the base of three pillars i.e. *Nidana Parivarjana* ( avoidance of etiological factors), *Apakarshana* (complete elimination of disease causing morbid substances by purifying body with the help of *Panchakarma*), *Prakriti Vighata* (Rational use of medication, *Rasayana Chikitsa, Sadvritta-palan*). However, *Ayurveda* quotes that root cause analysis is considered as significant first and then appropriate treatment according to that will be pre-

ferred.

Through different modes of treatment & prevention, *Ayurveda* accepts the presence of micro - organism & most emphasis is given to maintain equilibrium of the internal environment so that to avoid multiplication of causative organism. For prevention, *NidanaParivarjana* in the form of *Dhoopana*, with *Bhootanashak Dravyas*(antimicrobials) has important role to remove causative factors by purifying the air. Prevention aspect of modern approach is justified by ancient science in the form of proper & strict conduction of *Dinacharya* & *Ritucharya* (specific daily & seasonal regimen), application of *Sadvritta* (good moral conducts) & *Achararasayana; Ashtanga Yoga* to keep harmony between internal environment of human body & external environmental factors.

As people with less immunity are more vulnerable for attacks of such communicable diseases vary easily. Therefore, Importance & role of diet is very cru-

**Table 5: Rasayan Herbs for COVID -19**

S.N.	Rasayan Drug	Mode of action
1	Tulsi	Immuno-modulator, Adaptogen
2	Guduchi	Immuno-modulator
3	Shatavari	Immuno-modulator, Adaptogen
4	Ashvagandh	Adaptogen
5	Haridra	Adaptogen, Antioxidant
6	Amalaki	Adaptogen
7	Guduchi	Adaptogen, Nootropic
8	Triphala,	Antioxidant
9	Guggula	Antioxidant
10	Mandukparni	Nootropic
11	Yashtimadhu	Nootropic
12	Shankhapushpi	Nootropic
13	Maricha	Adaptogen ,can be used in manner of Vardhaman matra like pippali & digestive stimulant and tonic.
14	Chitrak	Adaptogen & Digestive stimulant
15	Agastya	Useful in Kasa, Pratishtaya, Peenasa with honey
16	Haritaki	Rasayana (Adaptogen & antioxidants), Balya
17	Pippali (Piper longum)	Adaptogen & Due to Snigdha Guna ,it gives strength to the respiratory channel

cial for management of COVID since diet is basic need for survival of human body & balanced, healthy diet always improve the immune system by building good nourishing tissues. Considering the rutu and the present environmental conditions, Physical and mental health, diet should be planned. Fruits, vegetables, cereals included in diet helps to maintain the health properly and they can feel light and further it help to proper digestion ,it also leads to burn fats, calorie, which will lead to healthy body and help to maintain to immunity as per previous articles.

Due to similarity in symptoms, causative pathological factors described in *Samhita* in context of *Vatasleshmak Jwar, Shwasa, Kasa, Hikka, Pratikshaya* can be taken into consideration during management of COVID-19

Utilization of *Ayurvedic* Herbs with drugs having properties e.g. antiviral, Antioxidants, immunomodulatory, antipyretics and bronchodilators which strengthen the respiratory system and improving the immunity can be highly appreciated in conditions such as covid-19 (Vinay and Rajshri, 2015). All drugs such as *Vasa, Brahmi, Shallaki, Haridra, Ashwatha, Tulsi, Kutaki, Pippali, Kantakari*

advised in *Pranavaha Strotas Vyadhi* which are anti-asthmatics & broncholytics in nature can be used here.

Concept of *Rasayan* is very important because there are more chances of survival of causative virus & potential of their rapid multiplication in body where status of immunity is grossly compromised which may lead to death or damage the particular organ or part of body. Application of immunomodulator drug in the form of *Rasayana* & antioxidant herbs should be recommended for new born baby or below 8-10 yrs child, too old people, Diabetic, Hypertension, Heart disease etc whose immune system is grossly compromised (Rakesh, 2019). Desired action of *Rasayana* drugs are to prevent diseases, to avoid recurrence of the disease and to impart strength to *Pranvaha Strotas* by enriching *Rasa* with the nutrients, improving digestive fire in GIT as well improving digestion at cellular level i.e. metabolic process, improving microcirculation at the level of strotas. Among various types of *Rasayana*, especially *Kuti praveshik Acharya Rasayana* acts as a catalyst for rejuvenating medicines. It also helps to resolve panic stage of population of affected area by any epidemics by improving mental status of person

**Table 6: Asanas for COVID -19**

S.N.	Type of Asana	Effect
1	SukhAsana and Pranayama	Supports strong immunity
2	<i>Kurmasana</i>	Supports the thymus which is responsible for immunity
3	Halasana (Plow pose)	Releases white cells in the body and strengthens the immune system
4	Bhujanasana (Cobra Pose )	Open chest and prevent pneumonia & Increases lung capacity Helps release white cells that improve the body's immunity
5	Setu BandhAsana (Bridge pose)	Clears the channels of heart and improves blood circulation. It increases energy in the body to help put a better resistance against pathogens
6	Dhanurasana (Bow pose)	Improves the flow of white cells by putting pressure on the digestive system
7	Matsyasana (Fish pose)	Expands the chest and stimulates the thymus which helps improve the body's immunity level.
8	Shishuasana (Child pose)	Decreases congestion in the chest and build a better immunity defense system
9	Ustrasana(Camel pose)	Prevents bronchial congestion
10	Shiva asana	Increases lung capacity .
11	Shalabha asana	Increases lung capacity

for optimistic thinking, relieving mental stress and physical strain, improving patience and tolerance capacity of them.

Role of *Pradhmana* or *Shodhana Nasya* in COVID -19 can be justified on the basis of opinion of *Acharya Charaka* as irritant medicines used in *Pradhmana* or *Shodhana Nasya* drugs and removes the vitiated dosha immediately from respiratory tract through eyes, ears, Nose & throat. As most common route of transmission of the Covid Virus is Nose, eyes or mouth, administration of medicines in the form of nasya procedure, a protective media can be created , to prevent the entry of virus in body & to avoid effect of air pollutants on nasal as well as bronchial mucosa. *Nadi Sweda* in the form of Steam inhalation protects respiratory tract by different air pollutants & allergens responsible for airborne communicable diseases.

By means of these different *Upakrama*, person can keep distance form CORONA since these all *Upakramas* induces clear nasal and oral route and cure disease related to respiratory tract by decreasing *Kapha Dosha*.with improvement in immunity & efficiency of sense organ strongly. Appropriate use of *Panchakarma* and *Rasayana* along with *Sadvrittapalanare* also recommended strengthening the

*Agni* to avoid *Amavastha* in body. ([Trikamaji, 2011](#); [Atrideva et al., 2009](#)).

*Dhoopana Karma* explained in *Ayurveda* can be used for massive & local sterilization. *Yagnya* in the form of medicated *Dhoopana* was performed by the intension of mass hygiene. Various *Dhoopana* yoga in contagious disorders like viral fever, *Jwara* or *Kustha* suggests its antimicrobial activity. Almost all the *Dhoopa* ingredients have action of deodorant, antiseptic, insecticidal, anti pyretic, anti inflammatory etc. As *Dhoopana Dravya* have bacteriostatic or bactericidal, wormicidal, anti-inflammatory, antiseptic effect ([L, 2013](#)), massive sterilization can be achieved through use of *Dhoopana* by reducing the microbial load of the environment. Their volatile would be a distinct advantage in lowering microbial contamination in air and on difficult to reach surfaces. Therefore, the *Dhoopana* therapy can be used in Pandemics like COVID as it is invasive form of route of herbal drug administration to avoid further spread of contagious diseases through contaminated air.

Hand sanitizer and Nasal spray prepared with *Qwath*, *Phant* & *Arka Kalpana* with specific *Ayurvedic* drugs with above properties checks over transmission of pathogens from source of

**Table 7: Drugs for fumigation of specific items according to different Acharyas**

S.N.	Dhupan Sthanas (Type of Items)	Ingredient of Dhoopana Yoga
1	Shayaa, Vastras, Rooms Surroundings or Agara, Vastras, Shayyas and chairs	Sarshap, Atasi,Hingu, Guggulu, Vacha, Brahmi, Jatamansi (Cha.Sha- 8/61 ,Cha.Chi - 3/307, Cha.Chi-23/98) Peacock Feathers ,Sirisha And Ghee. Shikhipiccha(Plumes Of Peacock), Sarshap, Chandana
2	Vrana kathinya kar Dhupa	Agaru, Chandana
3	Varana mridu kara Dhupa	Ghee, Majja ,Vasa.
4	Kumaragara (Paediatric ward)	Sterilising of beddings, clothings,Yava,Sarsapa, Atasi, Hingu, Guggulu, Vaca, Coraka, Brahmi, Jaṭamansi, Ashoka, Rohini, Sarpnirnok with Ghrita (Cha.Sha. 8/61) Dead crow with Sarpi, Vasa, Majja Raksoghana Dhupa for sterilising beddings, clothings, coverings of child (A.H.U.1/25, 26)
5	Postoperative	Guggulu, Agaru, Sarjarasa, Vacha, Sarsapa, Lavana with Ghrita Fumigate not only wound but also beds etc. in order to remove foul odour and flies (Su. Su.5/18) Guggulu, Agaru, Sarsapa, Sarjarasa, Vacha, Nimba, Hingu, Lavana with Ghrita (A.H.Su. 29/26)
6	Vranitagar, Shalyamandir (operation theatre)	Raksoghana drugs such as Sarshapa, Nimba, Lavana with Ghrita fumigation to be done twice a day for 10 days to destroy microbes & avoid their reattack the surgical patient (Su.Su. 19/24, 28). Guggulu, Agaru, Sarjarasa, Vacha, Shwetasarshap, Lavan ,Neemba , Ghee. Sarshap, Ghee, Neemba, Lavan.(Su Su- 5/18,Su. Su-9/28,Su.k. 3/17)
7	Vayushuddhi	Haridra, Ativisha, Abhaya, Ela, Musta(Su.Su-5/18, Su.Su- 9/28, Su.k.- 3/17).
8	For child'sbed , clothes,pillows, blankets	Guggulu (A . H . U . 1/25),Dried crow and Trivrita (A . H . U . 1/26)

infection to hand and nose respectively. Medicines effective in Pranvaha Srotas diseases can be applied for the same purpose. Application of both these non-pharmacological interventions plays key role for prevention of COVID-19

In context of this era, *Sadvruuta* or *Acharayana Rasayan*, complete stay at home, follow *Dincharya*, *Ritucharya*, intake of warm water, maintenance of hygiene can be applicable in this outbreak of Corona Virus. Preventive aspect can be fulfilled by maintaining respiratory hygiene and cough etiquette with the help of covering mouth & nose with tis-

sues or handkerchiefs while sneezing, coughing, by proper disposing such used items ,by washing hands with disinfectant regularly especially after contact with respiratory secretions ,by using gloves, maintaining specific distance while communicating directly Stressing hand hygiene, by avoiding visiting at public places which prevents exposure of causative factors of *Janapada Dwamsa Vyadhi* & checks over the transmission of infection. Such type of *Sadvruutta* should be followed strictly by patient, family members, visitors, employees, and care providers. Above broad spectrum regime



of *Sadavrutta* planned for physical as well mental hygiene is a very cost effective & simple to follow.

In this way, integrative approach of *Ayurveda* can be described in concise but different forms of holistic methods such as *Dinacharya*, *Rutucharya*, *Vyayam*, *Ayurvedic* drugs & herbs, *Upakrama* of detoxification, Spiritual practices like *Homa*, *Hvana* & *Yoga*, *Satvavajaya Chikitsa*, Concept of *Rasayana* in the form of specific formulations & *Acharya Rasayana-Sadavrutta*, *Yoga* & Spiritual practices, *Dhoopana* therapy, useful drugs for formulations of *Ayurvedic* hand sanitizer and nasal spray for prevention & management of communicable diseases like COVID-19. All these remedies helps in developing immunity through their pharmacological & non pharmacological actions by inducing immuno modulation of essentially white blood cell, macrophages, natural killer cells.

## CONCLUSIONS

Considering various preventive or curative measures of *Ayurveda* in the form of specific seasonal & dietic regime, proper *Vyayam*, rational & appropriate use *Ayurvedic* drugs, *Shodhana Upakrama*, *Homa*, *Havana* & *Yoga*, *Satvavajaya Chikitsa*, *Rasayana Chikitsa*, *Acharya Rasayana* & *Sadavrutta Palana*, *Yoga* practices, *Dhoopana* therapy which are based on different basic principles of *Ayurveda* can be applied cumulatively for prevention & management of COVID-19. All these sources helps to prevent and control vicious cycle of infection by limiting their sources, preventing the routes of transmission, minimising portals of entry, and protecting susceptible patients by improving immunity. All above factors can be highly recommended for persons of active phase and who are in quarantine stage or those are in vulnerable group for COVID -19 However, further extensive research are needed to establish their authenticity, applicability in present era & to identify their limitations in various stages of such disease condition.

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