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Ayurveda approaches to COVID-19 in 2nd wave: Lessons learned from practiceAshok Kumar Panda^{1,*}, Dipti Tarini Palei¹, Suwendu Rout², Sarbeswar Kar³¹Dept. of Ayurveda Medicine, Central Ayurveda Research Institute (CCRAS), Bharatpur, Bhubaneswar, Odisha, India²Dept. of Ayurveda Medicine, Sri Jayendra Swaraswati Ayurveda Medical College, Nazarethpettai, Chennai, India³Dept. of Ayurveda Medicine, JSS Ayurvedic Medical College and Hospital, Mysuru, Karnataka, India

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ABSTRACT

Ayurveda is a live traditional system of medicine with an unbreakable practice since 3000 years. Its principles and its approaches including oral administration of preventive drugs, herbs, formulae, decoction, indoor herbal medicine for fumigation, etc. were recommended for effective prevention and treatment whenever the emergent of new diseases. This paper highlights the patho-physiology of Corona as per Ayurveda, Clinical staging, preventive and curative approaches as learned time to time. *Guduchi*, *Yastimadhu*, *Aswagandha*, *Ayush kwatha* and *Anu taila nasya* have excellent practice evidences for prevention of Covid-19 in 1st wave of corona. Sajeevani app developed by AYUSH to study the AYUSH practices. AYUSH -64 is an evidence-based treatment to cure mild to moderate COVID infection developed by Central Council for Research in Ayurveda Sciences. The second wave of COVID-19 is more tragedy than 1st wave and its impact on health care systems of our nation is devastating and unprecedented. National campaign for AYUSH-64 started and it is recommended in National Clinical Management Protocol based on Ayurveda and Yoga which is vetted by National Task Force on COVID management for COVID-19 Patients in Home Isolation. All Institute of Ayurveda released list of medicines for management of various symptoms of Covid. General public have more trusted upon Ayurveda practitioners as controversies of addition and deletion of steroid and antiviral in modern treatment protocol. The horror of Black (*Mucormycosis*) and white (*Candiditis*) fungus infection due to irrational use of immunosuppressive drugs confused the general people. More numbers of Covid patients received AYUSH-64 in 2nd wave. Ayurveda Practice requires sound knowledge of Yukti Pramana (Logic and self judgement) by discerning clinical for better outcome irrespective of evidences and guidelines. We all are learning the pathogenesis of different mutants of Covid. Ayurveda approaches reduced the complication and progression of disease. This review will provide basic understanding Ayurveda for covid care.

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1. Background

In Ayurveda, Learning is continuous process of human being which surrounded by own attitude for learn knowledge and share knowledge by own academic curiosity, reading & practicing habit and creative thinking ability in application and gained experience. Ayurveda is a live

traditional system of medicine with an unbreakable practice for 3000 years. India recorded nearly three cores conformed Corona virus Cases and corona related deaths crossed three Lakh seven thousand since the epidemic began, according to the World Health Organization (WHO). Therefore, all systems of medicines should alert and come forward to initiate prompt action to combat this alarming situation of our country. Ayurveda is the oldest and most utilized form of medicine and established through vast experiences of

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centuries, however, it phased out due to the establishment of allopathy medicine. Many people questioned about the Ayurveda approach to COVID-19 as because Ayurveda is an old science and COVID-19 is new disease. Historically, it is well-known that whenever there is outbreak of any flu like illness or viral infection in India, Ayurveda principles and its approaches including oral administration of preventive drugs, herbs, formulae, decoction, indoor herbal medicine fumigation, etc. were recommended for effective prevention and treatment. Research Councils under the Ministry of AYUSH, Government of India have also issued advisory based on the Indian traditional medicine practices i.e. Ayurveda, Homeopathy and Unani before the outbreak in India.¹ When there is an epidemics under the term of *Janapadodhwamsa* (Pandemic where massive destruction of life) where Ayurveda text enumerated that due to either of deranged of environmental factors like-Vayu (air), *Jala* (water), *Desha* (habitat) and *Kala* (seasons), certain diseases arised which turned to even pandemic, Further, under the heading of *Adidaivika Bala Pravritta Vyadhi* (diseases arising due to such causes that cannot be controlled by human intelligence), terms such as *Sansargaja* an *Upsragaja* are mentioned which indicate that there are certain diseases which can be transmitted directly from infected persons to healthy persons such as contagious diseases or certain diseases can be transmitted by respiration/air borne. As per the hints available in Ayurveda, the management of these infectious diseases can be either preventive or curative.² A consciences study was published first³ and pragmatic plan for interventions was also seen.⁴ The impact corona on Ayurveda practice and research is observed but more people attracted towards Ayurveda practices.⁵ Then Rasayan in Prophylaxis, plan protocol and review of Phyto therapeutic to fight Corona virus found to strengthen the evidences of Ayurveda.^{6–10} *Guduchi*, *Yastimadhu*, *Aswagandha*, *Ayush kwatha* and *Anu taila nasya* have excellent practice evidences for prevention of Covid-19 in 1st wave of corona. Sanjeevani app developed by AYUSH to study the AYUSH practices. AYUSH -64 is an evidence-based treatment to cure mild to moderate COVID infection developed by Central Council for Research in Ayurveda Sciences.

1.1. Difference in 1st and 2nd wave in COVID-19 infection

Every body talking about the 'wave' of corona virus and it's implications. But the strict definition of wave is not scientifically defined in epidemiology. A epidemic wave/phase is defined as natural pattern of peaks and valley which rise the number of sick people and deaths in a time frame and then decline. The first wave peak in India in September 2020 and second wave started from 1st week of March 2021. Restrictive measures like social distancing, lockdown, case detection, isolation, contact tracing, and

quarantine of exposed had revealed the most efficient actions to control the disease spreading in 1st wave of COVID-19. All the health care facilities were asked to stop regular out-patient and in-patient services and to continue with solely emergency services. Doctors were encouraged to use telemedicine services. Arogya Setu app was also launched to connect essential health services with people of India to fight against COVID-19.

The second wave of COVID-19 tragedy and its impact on health care systems of our nation is devastating and unprecedented.¹¹ There could be several factors responsible for the increased number of cases in the second wave. It is observed that the mutant virus has more effective transmission capability and its incubation period is also lesser. There has been a widespread disregard to the 'Covid Appropriate Behaviors or CAB' by the public, more severe illness, reduce neutralisation of antibodies and reduced effectiveness of treatment/vaccine.¹² The breathing difficulties are commonly seen in 2nd wave, right from the beginning of infection in most of the patients. The infection causes decrease oxygen saturation (SPO₂< 90) which leads to lungs damage and organ failure. There is an acute shortage of hospital beds, oxygen supply, medicines, and ventilators across the country for COVID-19 patients.¹³ Although there is no significant percentage increase in the death rate in the second wave, but due to alarmingly high number of infections, the total death numbers are disappointingly high (Table 1). Hence, quick and effective administrative as well as therapeutic intervention needed to reduce the oxygen dependence and hospital hospitalization.

National campaign for AYUSH-64 started and it is recommended in National Clinical Management Protocol based on Ayurveda and Yoga which is vetted by National Task Force on COVID Management for COVID-19 Patients in Home Isolation. All Institute of Ayurveda released list of medicines for management of various symptoms of Covid. General public have more trusted upon Ayurveda practitioners as controversies going on in addition and deletion of steroid and antiviral in modern treatment protocol. The horror of Black (Mucormycosis) and white (Candiditis) fungus infection due to irrational use of immunosuppressive drugs confused the general people.

1.2. Ayurveda understanding of COVID-19

With this background, the *trisuotra* (three factors) of Ayurveda i.e -*vikara prabruti* (chief complain an history of disease), *Adhithana* (site of manifestation) and *Sammuthanna visesha* (Clinical presentation) can be considered in the emergence of new disease or unknown disease.⁹ The samprapti *ghatak* (Component of pathogenesis) can be proposed from the said factors as Table 2 and its clinical staging described in Table 3. The involvement of *dosa*, *dhatu*, *srotas* etc can predict the treatment outcome. The clinical symptoms are grouped to

Table 1: Differences between the first and the second wave of COVID-19 noted in India.

Attributes	First wave	2nd wave
Causative organism	SARS-Cov-2 virus	Several mutants of SARS-Cov-2 virus
Knowledge about the disease	Less	More
Symptomatology	More related to respiratory system	Newer symptoms like Gastrointestinal, Cardiovascular and Neurological etc. adding
Presentation		
Shortness of breaths	More severe	Lesser intense
Age profile of the patients	Less cases with breathlessness	More cases with breathlessness
Comorbidities	More older population	More younger population
Drug availability	Patients with comorbidities affected more	Less
Health care workers		
Bed capacity	Acute shortage and black marketing	Available in the hospitals and pharmacies
Ventilator beds	• Lesser trained people	• More trained increased
PPE Vaccine Treatment affordability	• Fear of acquiring infection	• Lesser fear to acquire infection
Oxygen requirement to the patient	• Not vaccinated	• Mostly vaccinated
Requirement of mechanical ventilation	Limited	Enhanced
Disease Spread Death rate Positivity rate		

Table 2: Proposed samprapti ghataka (Components of Pathogenesis) of COVID-19

Samprapti ghataka	Name of morbid factors
Dosa (Morbid factors)	<i>Kapha, vata, pitta</i>
Dusya (Morbid structure involved)	Rasa then all dhatus
Srotas involved	<i>Pranavaha</i> first and then all srotas
Sroto dusti (Channel's pathology)	<i>Atiprabruti, sanga, vimarga gaman</i>
Vyadhi swabhava (Nature Of disease)	Asukari(Acute)

Table 3: Clinical staging with symptoms of COVID-19 with ayurveda correlation

Clinical staging	Symptom with Ayurveda corelation
Stage 0	Asymptomatic with h/o travel or contact and COVID-19 positive by PCR test. <i>Rogi bala prabruta stage</i> (more host Immunity)
Stage 1	Sneezing, cough, mild fever < 102 ⁰ F with COVID-19 positive by PCR <i>Prakruta Jvara</i> (<i>Kapha pittaja jvara</i>)
Stage 2	Sneezing, cough, fever > 102 ⁰ F , Malaise , COVID-19 positive by PCR. <i>Kapha pittaja Sannipata Jvara</i> , Oxygen saturation (SPO ₂)>92
Stage 3	Sneezing, cough, malaise, dyspnea and hypoxia(Oxygen saturation (SPO ₂)<92 and COVID-19 positive by PCR <i>Dhatugata Jvara</i> HRCT score >18
Stage 4	Sneezing, cough, malaise, hypoxia and COVID-19 positive by PCR, Organ failure. <i>Upadrava of sannipata jvara</i> , CRP >10., HRCT score <18

Table 4: Ayurveda preventives approaches for COVID-19

Beneficiaries for prevention	Approaches for preventions
Apparently healthy individual who have no sign and symptom/travel history or contact	Social distancing, wearing of Mask, frequent hand wash, Haldi milk, Chauwan prash, Doopana, Decoction of Panchakola , Parnayama, exercise, Pranayama
High risk group/geriatric person/those have history of immigration to other country/who declared self-isolation or quarantine/ pre-symptomatic phase of COVID-19	Stay at Home, Haldi milk, Chauwan prash, Doopana, Decoction of Panchakola , Parnayama, exercise Treatment of co-morbidity factors like Diabetic, CKD, CLD,COPD, HIV, cancer, etc
Migrant Labour, front line COVID warriors	Frequent hand wash, sanitizer, Mask, PPE kit use Haldi milk, Chauwan prash, Doopana, Decoction of Panchakola , Parnayama, exercise, Aswagandha
Doctors and Paramedical staff	Frequent hand wash, use of sannitiser, Mask, PPE kit use, Haldi milk, Chauwan prash, Doopana, Decoction of Panchakola , Parnayama, exercise, Aswagandha,

Table 5: Curative approaches of ayurveda for asymptomatic COVID-19 positive cases (Stage 0)

Name of Ayurvedic Curative Method	Curative Approaches
Yukti vyapasraya chikita (Logical approach)	Following Dinacharya, Ratricharya, Rutu charya, sadvrita (good conduct) Diet-Emulsified fat (cow ghee) with roti/rice, Low sugar and fat diet , Sufficient luke warm water, fibrous diet, organic vegetables and fruits Life style- Practice of Pranayama, yoga Medicine- Guduchi, Sanjeevani vati, Aswagandha, Sudarsana ghana vati, AYUSH-64 Nasya and Gondusa (gargling)
Satva vajaya (Psychological approach)	Dhyana (Meditation), Pranayama(Breathing exercise), Sadvrita (Personal and social hygiene), Achara Rasayana (Practice of good conduct), Counselling by doctor, spiritual leaders, clinical psychologists etc
Daiva Vyapasraya chikitsa (Divine therapy)	Chanting Mantra, Lighting diya (Lamp), prayer, performing Yagyna, Homa, Doopana, Offering food to animals, poor people etc.

Table 6: Stage wise suggested curative approaches COVID-19

Clinical staging	Suggested Medication
Stage 1	Pippali Rasayana, Agasthi Haritaki, Sudarsabna ghana vati, Dasmula haritaki, Bilvadi gulika, Samsamana vati, Saubhagya vati, Moha laxmi vilash Rasa, Yasti madhu, Aswagandha, AYUSH-64 etc
Stage 2	Pippali Rasayana, Vyaghari Haritaki, Sudarsabna ghana vati, Dasmula haritaki, Bilvadi gulika, Samsamana vati, Saubhagya vati, Moha laxmi vilash Rasa, Gorachanadi vati, AYUSH-64 ,Practice of Pranayama etc
Stage 3	Subarnna vasanta Malati Rasa, Swasakasa chintamoni, Samira pannaga Rasa,Siddha Makardwaja Rasa, Haldi milk, oxygen therapy start with 2.5 lt per hour and increase up to achieve Spo2>96. AYUSH-64, Practice of Pranayama
Stage 4	Mechanical ventilation , Emergency therapy Swasa kasa Chintamoni Rasa, Samira pannaga Rasa

different stage from 0-4 for better understanding.

1.3. Intervention strategies

The approaches may be preventive and curative as Table 3. The three mode of treatment approaches i.e. *swatvabachaya*, *Daiba vyapasraya* and *yukti vyapasraya* can be proposed time to time as Table 4. The treatment can be planned as per clinical stages (Table 5). All the medications cited here are proposed by eminent scholars of Ayurveda.

2. Discussion

In order to properly address the discussion of potential effect of various Ayurvedic single or compound formulations must have kapha pitta hara, tridosahara, Rakta prasadana/sodhaka, Vishahara, Jvara hara, Asukari, Rasayana/urjaskara and bahu kalpa.⁷ The said compound must be tested for its antiviral properties. Phytotherapeutic agents containing higher concentration of sesquiterpene, poly phenols and flavonoids have inhibited the production of inflammatory cytokines and prostaglandin which are more produced in COVID-19. Guduchi, Yastimadhu and Aswagandha has equal effect on cough as codeine.¹⁴ Garlic extract improves NK and T cell function and reduce the severity of cold and flu symptom.¹⁵⁻¹⁸

The Inhibitory Effect of Curcumin is significant on Virus-Induced Cytokine Storm and Its Potential Use in the Associated Severe Pneumonia. All speculation will

be materialized after clinical data. Ayurveda poly herbal compound AYUSH-64 treating respiratory infection and Malaria approved by Ministry of AYUSH.^{19,20} CSIR also developed ACQR for clinical trial against COVID-19.^{19,20} National campaign for AYUSH -64 is initiated and targeted to reach all door step through Seva bharti. The AYUSH tool free no 14443 for covid-19 care. Therefore, integrated approach with involvement of all health care groups is necessary because individual speculation hinder research and collective sharing of scientific knowledge are necessary to tackle ongoing pandemic.

3. Conclusion

Ayurveda system of medicine has enough literature and possibilities to be serve both for prevention and cure of COVID-19. Preliminary clinical evidences and experiences showed significant result in subsiding clinical symptoms and reduce the progression of disease process in asymptomatic, mild and moderate cases of covid patients. However, Ayurveda Practice requires sound knowledge of *Yukti Pramana* (Logic and self judgement) by discerning clinical for better outcome irrespective of evidences and guidelines. This short review is collective efforts of experiences which will provide an important opportunity for learning and generating credible evidence for Research scholars and Practitioners.

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5. Source of Funding

None.

6. Conflict of Interest

None.

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