



ROLE OF AYURVEDA IN MANAGEMENT OF COVID 19

Ayurveda

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ABSTRACT

The Coronavirus disease (COVID-19) caused by the virus SARS-CoV-2 has become a global pandemic in a very short time span. There is an urgent need to find a specific cure for the disease and global efforts are directed at developing SARS-CoV-2 specific antivirals and immunomodulators. Ayurveda is the world's oldest medical system that can manage any disease without side effects. Ayurveda being the science of life, propagates the gifts of nature in maintaining healthy and happy living. We all know that "prevention is better than cure". While there is no medicine for COVID-19 as of now, it will be good to take preventive measures which boost our immunity in these times. In Ayurveda, Immunity comes under the heading of Vyadhiksamatwa. In Ayurveda, many single drugs or compound formulation were mentioned as Rasayana to boost up Immunity (Bala or Vyadhiksamatwa). Amongst several drugs Guduchi, amalki, aswagandha, pippali, harida, yasthimadhu, tulsai, chiryata, katuki and play an important role in Rasayana therapy.

KEYWORDS

INTRODUCTION

The, SARS-CoV-2 virus is responsible for causing the ongoing Coronavirus disease (COVID- 19) pandemic [1]. Higher infectivity as compared to the SARS-CoV virus reported in 2003 and absence of a definite cure are the worrisome aspects of SARS CoV-2 [2]. In the view of rapid spread in short period of time, the number of people infected globally is enormous (~over 2 million), and this poses a tremendous challenge to healthcare systems. COVID-19 has an age related skewed distribution of morbidity and an overall lethality although the numbers are changing as the disease is progressing [3]. The Centre for Disease Control and Prevention (CDC) reported that, COVID-19 patients with co-morbidities such as chronic lung diseases (e.g. asthma, COPD), hypertension, obesity, Type 2 Diabetes Mellitus (T2DM) are vulnerable to a higher mortality rate [4]. The SARS-CoV-2 virus primarily attacks lung alveoli for its replication. The Spike protein of the virus binds to Angiotensin Converting Enzyme-2 (ACE-2) receptors on the surface of type-II pneumocytes of alveolar lining, which are then internalised and the +ssRNA is released [5]. With the help of host ribosomal machinery and the RNA-dependent RNA polymerase (RdRp) enzyme SARS-CoV-2 synthesizes its polyproteins and multiplies its +ssRNA. The new copies of SARS-CoV-2 are released into the alveolar sac by destroying the infected pneumocytes. The inflammatory mediators released after pneumocyte damage recruit immune cells at the infected site. Macrophages release inflammatory cytokines into the blood leading to vasodilation of blood vessels increasing capillary permeability of endothelial cells. Neutrophils release reactive oxygen species (ROS) and proteases to destroy viruses which also damage normal pneumocytes and generate cellular debris in alveolar space. These inflammatory and immune responses result into alveolar consolidation leading to increased respiratory rate followed by cough. The systemic inflammatory response acts as messengers to hypothalamus to increase body temperature [6]. In some patients the cytokine response goes out of control leading to excessive collateral damage to organs with a possible progression to death [7, 8]. Presently there is no cure for the disease and the treatment is symptomatic. In some countries, patients are being treated using existing combinations of antivirals used for other viral infections [9]. Clinical evidence explaining the efficiency of these antivirals against SARS-- COV-2 are limited and not defined [10]. Therefore, for developing specific therapies as well as for boosting speed and scale of clinical evaluation WHO launched Solidarity clinical trial on April 8, 2020. This includes screening of four study treatments in comparison with standard of care. Based on available experimental data, remdesivir, lopinavir/ritonavir, lopinavir/ritonavir with interferon beta-1 α , and chloroquine or hydroxychloroquine are the chosen study drugs [11]. For patients with co-morbidities, it is inevitable to take daily medication along with COVID-19 managing drugs. Therefore, it is required to have safe pharmacotherapy for COVID-19 that can be co-prescribed with WHO solidarity trial drugs and commonly prescribed drugs such as anti-hypertensive, anti-asthmatic and anti-diabetic. Administering plasma of a recovered patient to the critically ill COVID-19 patients also seems promising [12]. Hydroxychloroquine which is being used in many countries for COVID-19 treatment under emergency

circumstances, seems to have limited beneficial evidence [13, 14]. There is indeed a great rush to find the holy grail for COVID-19 in terms of vaccines and therapeutics against SARS-CoV-2. Several pharmaceutical companies have announced clinical trials for drug and vaccine candidates. However, it may take a long time to reach the community.

Traditional medicine systems such as Ayurveda, have a holistic approach of considering mind-body-physiology to deal with disease conditions [15]. The Ayurvedic philosophy suggests delivering a group of phytoconstituents that holds potential to give adaptogenic, immunomodulatory effects and also act on drug targets [16,18]. Thus, in Ayurveda, Rasayana botanicals are used for rejuvenation by boosting the immune system and alleviating disease condition [19-21]. Of several known as Shatavari, *Tinospora cordifolia* (TC) known as Guduchi and *Withania somnifera* (WS) known as Ashwagandha, are known to modulate the immune system and possess antiviral activities [8, 19, 20, 22, 23]. The ideal COVID-19 therapy should show (a) antiviral properties against SARS-COV-2, (b) be safe for concomitantly administered drugs like anti-hypertensive, anti-diabetic, antiasthmatics, and drugs those are used in respiratory tract infections (c) should modulate immune system with rejuvenation ability (mainly for cardio-respiratory and nervous system) (d) should show therapeutic adjuvant activity with drugs used in WHO Solidarity trials.

Fever (Jwara) is well understood in Ayurveda and it occupies the first chapter in treatment (chikitsa) in two of the canonical texts of Ayurveda, namely Charaka Samhita and Ashtanga Hridayam. It deals with diagnosis (nidanam), pathophysiology (samprapti), classification, management, medicines, diet and prognosis. In this case, the fever was diagnosed as per his presenting symptoms as a Vata Kapha predominant one [24, Nidana Sthana, 2/25], necessitating appropriate management. Subsequently, the patient tested positive for COVID-19. From the Ayurvedic point of view, COVID-19 is a janapadodhwamsa vikara (epidemic disease). The concept of an epidemic is described in Charaka Samhita: Vimana Sthana, Chapter 3. even though there is dissimilarity in the physical constitution of human beings, still there are such factors which are common to all individuals and vitiation of these factors leads to the simultaneous manifestation of diseases having the same set of symptoms leading to the destruction of countries. Factors which are common for all the inhabitants of a country are air, water, location and seasons. [25, Vimana Sthana, 3/6] Janapadodhwamsa is a situation where the environment - air, water, land and seasons - is vitiated, causing a simultaneous manifestation of a disease among large populations (epidemic), destroying human habitations.

AIMS AND OBJECTIVES

1. To analyze the result of ayurvedic herbs preventio against covid 19.
2. The importance of Ayurveda to enhance immunity against covid 19.

MATERIALS AND METHODS

Material - Relevant literature is referred in Samhitas, Sangraha Granthas and contemporary literature.

METHODOLOGY

Review study Literature related to the title is explored from all reliable Ayurvedic journals and Modern journals from internet. Conclusion has been drawn from comparison and rationale.

DISCUSSION

COVID-19 is a pandemic disease which infects peoples globally. Ayurveda which was evolved thousands of years ago described epidemics in the name of Janapadodhvansa or Marak.[26] In the treatment of said Rasayana therapy along with Swasthavritta Paripalana (Dinacharya and Ritucharya) were clearly mentioned. Satmya Ahara, Nidra (regular proper sleep), Yogic Asanas and Bramhacharya to be followed to boost up Vyadhiksamatwa. Here Rasayana therapy is discussed in brief. Rasayana therapy promotes and rejuvenate the physiology of body, produce resistance against disease both physically and mentally.

Rasayana is made up of two words: Rasa and Ayana. Rasa primarily means essential seven vital tissues (Saptadhatu e.g. Rasa, Rakta, Mamsa, Medha, Asthi, Majja and Sukra). Ayana means the path or channel. So, Rasayanas are those that bring about proper uptake, growth and improvement of essential Saptadhatus.

According to Acharya Charaka, a person undergoing Rasayana or rejuvenation therapy attains longevity, memory, intellect, freedom from diseases.[27]

Rasayana Chikitsa boosts the Ojas (immune system). Rasayana is the one that is concerned with the immunity enhancer. Rasayana is a treatment in which the body constituents are prepared to adapt to a selective tissue endowment program. This concept in modern scientific understanding would mean the enhancement of immune responsiveness of an organism against pathogens by non-specifically activating the immune system with immunomodulatory agents of plant origin. Rasayana improve the host resistance of an individual, helping to prevent aging and diseases. Rasayana Chikitsa or rejuvenation therapy helps to promote and preserve health and longevity in the healthy, and to cure disease in sick. Rasayana is helpful to increase the immunity of the person to keep him away from opportunistic diseases. The possible mechanisms by which action of Rasayana can be interpreted with modern aspects are as follows: nutritive function, immunomodulatory action, antioxidant action, antiaging action, neuro-protective action, haemopoietic effect etc. There are numbers of medicinal plants which play an important role to enhance immune system like;

Tinospora cordifolia- Commonly known as Guduchi or Amrita contain chemical constituents tinosporin, tinosporide and cordifolide. It has antioxidant, phagocytic activities, antipyretic action as well as immunomodulatory properties.[28] It is also mentioned as Medhya Rasayana in Charaka Samhita.[29]

Emblica officinalis- Commonly known as Amalaki or Indian gooseberry rich source of Vitamin-C. It contain low molecular weight hydrolysable tannins. It also contain ellagic acid, linolic acid etc. as chemical constituents showing activities against carcinogenesis,t also shows cytoprotective, anti-inflammatory, anti microbial, antioxidant and immunomodulator actives.[30]

Withania somnifera- Commonly known as Aswagandha or Indian ginseng contain withaferin A, withanone, withasomnine as major chemical constituents. It has established anti-inflammatory, antidepressant, antioxidant and immunomodulatory activities.[31]

Piper longum- Commonly known as Pippali or Long pepper which contain piperine, pipartine, pellitorine, caryophyllene etc. as major chemical constituents. In Atharvaveda, Pippali is mentioned as Rasayana. Acharya Charaka and Susruta also mention Pippali as Rasayana. It has anti-inflammatory, antispasmodic and immunomodulatory properties.[32]

Curcuma longa- Commonly known as Haridra or Haldi contain curcumene, curcumenone, curcone, eugenol, curcumins etc. as major chemical constituents. It has established antibacterial, antiinflammatory and antioxidant properties.[33]

Zingiber officinale - Commonly known as Sunthi or Ginger which contain á- and â- zingiberenes, zingiberol, zingerone, gingerol, á-curcumene etc. as major chemical constituents. It has anti-inflammatory, anticholinergic, antihistaminic, antioxidant activities and it also has bioavailability enhancer property.[34]

Glycyrrhiza glabra- Commonly known as Yashtimadhu or Licorice which contain glycyrrhizin, glycyrrhizic acid, glycyrrhetic acid and glabrine etc. as major chemical constituents. It has anti-inflammatory, antipyretic and antioxidant properties. It also mention as Rasayana in Ayurvedic texts.[35]

Ocimum sanctum - Commonly known as Tulasi or Holy basil contain bornyl acetate, cadinene, camphene, eugenol and limonene as major chemical constituents. It shows antibacterial, antifungal, adaptogenic, antiviral and immunomodulatory activities.[36]

Swertia chirata-commonly known as chirayata and kalmegha which contain xantonus, kamepfrol as major chemical constituents.it shows antiinflammatory ,hepatoprotective, antiviral, antimalarial, antioxidant activities.[37]

Pichrorhiza kurroa- commonly known as kutki which contain D-mannithol, kutkiol, kutkisterol, apocyanum, phenylglycoside as major chemical constituents.it shows antiinflammatory , hepatoprotective, antiviral activities.[38]

Probable mode of action

Rasayanas are those that bring about proper uptake, growth and improvement of essential seven vital tissues, which ultimately increases Oja. Thus there is regeneration of cells and body tissues leading to increased immunity. When Rasayana drugs of different Rasas are taken, they are digested by Jatharagni followed by Bhutagni. During this phase Vata, Pitta and Kapha produced along with Sara part i.e. Ahaara Rasa. This qualitative Ahaara Rasa produces pure Rasa Dhatu, which then continues the chain of production of other Raktadi Dhatus with the help of respective Dhatavagni upto Ojas formation. Therefore well formed Dhatus keep on nourishing the body till they are taken. Rasayana drugs act at the level of Rasa by improving the nutritional value of the Poshak Rasa which helps to obtain the best quality of Dhatu and some Rasayana drugs act at the level of Agni and Strotas by improving digestion and metabolism. The Rasayana drugs possessing the Ushna, Laghu, Ruksha, and Katu, Tikta, Kashaya Rasa acts at level of Agni, vitalizing the organic metabolism leading to an improved structural and functional pattern of Dhatu.[39] Drugs such as Pippali, Rasona, Haritaki mainly acts at level of Agni to improve the digestion and create excellence of Saptadhatu. Similarly Amalaki, Amrita, Pippali etc. are supposed to act the level of Dhatwagni also causing excellence of all Dhatus. Vyadhikshamatava is depends on the presence of Bala in the body. Rasayana drugs also influence Oja which increases Sharira Bala. A person with appropriate amount of Bala is also said Saptadhatusara. This provides the capacity to resist the external disease causing agents. Thus Rasayana can act as immunomodulator, by strengthening the immunity.

Probable mechanism through which immunity prevents infections

When a virus infects a person (host), it invades the cells of its host in order to survive and replicate. Once inside, the cells of the immune system cannot see the virus and therefore do not know that the host cell is infected. To overcome this, cells employ a system that allows them to show other cells what is inside them - they use molecules called class I major histocompatibility complex proteins (or MHC class I, for short) to display pieces of protein from inside the cell upon the cell surface. If the cell is infected with a virus, these pieces of peptide will include fragments of proteins made by the virus.

A special cell of the immune system called a T cell circulates looking for infections. One type of T cell is called a cytotoxic T cell because it kills cells that are infected with viruses with toxic mediators. Cytotoxic T cells have specialised proteins on their surface that help them to recognise virally-infected cells. These proteins are called T cell receptors (TCRs). Each cytotoxic T cell has a TCR that can specifically recognise a particular antigenic peptide bound to an MHC molecule. If the T cell receptor detects a peptide from a virus, it warns its T cell of an infection. The T cell releases cytotoxic factors to kill the infected cell and, therefore, prevent survival of the invading virus.[30]

CONCLUSION

In brief, through Ayurvedic concept of Vyadhiksamatwa not only we can keep at bay the physical bodily ailments but also definitely prevent various psychosocial discrepancies. Hence, for attaining good Vyadhiksamatwa, we should use various regimens and follow conducts as described in Ayurvedic texts for the same. Thus from the above we can conclude that Rasayana has important role in immunity enhancement and prevent infections whether bacterial or viral. So, it is required to create awareness among people about Rasayana drugs, which will prevent disease and promote health of the every individual distribution of ayurvedic drugs with deputy collector at ch.dadri on 27 July 2020.



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