



Role of Ayurveda in Management of Pandemic Covid-19 in Indian Scenario – A Review

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ABSTRACT

Ayurveda is an eternal science of India, which assumed to be originated around 6,000 BC since the Vedic era. Nowadays the whole world is facing a global public health crisis pandemic COVID-19. No effective treatment is available for this epidemic disease. The current article aimed to explore some important facts of Ayurveda which are helpful in boosting our immune system to protect against COVID-19. Protection of human health before the occurrence of the disease is the basic principle of **Ayurveda** i.e. Prevention is better than cure. The Ministry of Health and Family Welfare, Government of India and ICMR (Indian Council of Medical Research) has formulated time to time guidelines and advisories for social distancing, testing, treatment, and other reliable material.

Ayurveda specifies some medicinal herbs in our daily life in the form of spices to boost our immune system and prevention of diseases. It is the reason if we see the graph of COVID-19 infection globally; the infection rate in India is slower than in other countries. Government's efforts of motivating the people to social distancing, taking precaution measures and the guideline of Ayushmantralya to protect ourselves to boost our immunity are appreciable steps which became helpful to stop the community spread of coronavirus in our country. In this CORONACAL, AYUSH Mantralaya recommended some preventive health measures and self-care guidelines for boosting immunity as well as for maintains respiratory health. Ayurveda can play an important role in fighting and protection against COVID-19.

Key words: Ayurveda; COVID-19; Immunity; Immunomodulators

1. Introduction

Ayurveda is the science of life. Its knowledge originated in India about 5000 years ago in the Vedic Era. It places great emphasis on the maintenance of health by a balanced lifestyle, right thinking, and use of herbs (medicinal plants). Our body is assumed to be consists of five elements i.e. Earth, water, fire, air, and sky. In this reference, this line is taken from the "Ramcharitmanas":-

"ChitiJalPawakGaganSameera, Panchrchetatiadhamshareera"

Ayurveda enables us to maintain the balance of body mind and consciousness. It helps us to lead a happy and healthy physical-Mental life. Nowadays life is very fast and every moment of life is very challenging. About 30-40% population is facing psychological disorders i.e. anxiety, depressions, and many more mental problems. In this situation, Ayurveda can play a pivotal role in our life.

At present, the whole world is facing the pandemic novel COVID-19. This infectious virus first emerged from the city of Wuhan in China and spread all over the world very fast. Common symptoms of this disease are cough, cold, fever, severe respiratory illness, and pneumonia [1-4]. About 184 countries of the world are

suffering from this pandemic crisis, India is one of them but in India, the rate of communication is slower than in other countries. Everyone is trying to do the best in protection against this viral disease. No effective medicine, the vaccine is available for the treatment of this pandemic disease.

India is the second-most populous country in the world so it is very difficult to face this critical situation. Communication rate of COVID-19 is more than other viral infections so maintain social distancing is the best way to protect ourselves. Guidelines of government are followed by the people. According to the Ministry of Ayush, “Enhancing the body’s natural defense system (immunity) plays an important role in maintaining optimum health. While there is no medicine for COVID-19, it will be good to take preventive measures which boost our immunity at this time”.

The World Health Organization (WHO) named the 2019 novel coronavirus as Coronavirus disease (COVID-19). Firstly in Wuhan, China on 29 December 2019, it affected the patient’s lower respiratory tract with the symptoms of pneumonia. Starting from China it has been spread about 184 countries of the world [5-7].

The risk factor of death in infected people of COVID-19 the probability differs in different age groups. The most affected age group is 60-80 years. Another concerning factor is that if the people have another pre-existing illness and the medical history they are in a more severe zone of COVID-19 infection than other people. In this situation, a strong Immune system is the most effective weapon to fight against COVID-19. We have a strong immunity booster as “Ayurveda” which is involved in our eternal culture. We Indians not only in this critical situation of the COVID-19 crisis but also normally used to some specific Ayurvedic medications in our routine life. Ayurveda specifies some medicinal herbs in our daily life in the form of spices and many more others to boost our immune system and prevention of diseases. It is the reason if we see the graph COVID-19 infection globally; infection rate in India is slower than in other countries. Government’s efforts of motivating the people to social distancing, taking precaution measures and the guideline of Ayushmantraya to protect ourselves to boost our immunity are appreciable steps which became helpful to stop the community spread of coronavirus in our country.

2. Ayurveda

Ayurveda is the oldest medical system in India as well as in the world; its basic principle is maintaining balance within the external (body) and internal (mind) nature of human beings. It helps us to know the interrelationship of body and mind with nature. In ancient times Ayurveda, the Chinese medicinal system, and Greek traditional systems were used for the treatment of common diseases. Among these three medicinal systems, Ayurveda came out as the most effective medical practice because it directly correlates the interaction between body and mind [8].

2.1 Origin of Ayurveda

Ayurveda is the oldest natural healing system in India since the Vedic Era originated approximately 5000 years ago. According to Indian mythology, “**Ayurveda originated from Brahma, the God of Creation**”. **Dhanvantari** (Deity of medicines) was transferred this knowledge of herbal medicines to the modern world. In the Vedic time, essential information for achieving a balanced and healthy life was found in the sacred texts of that time i.e. the Vedas, specifically in the Atharva Veda (1500 BC). The information related to formulations for the treatment of different diseases contains 114 hymns of Atharva Veda [9].

In Vedic culture, Ayurveda was a religious medical practice where Vaidya performed religious rituals. Gradually this Vedic religious aspect of medicine was supplemented by scientific thinking, knowledge, and observations. During this time Ayurveda had taken the shape of a systematic approach of a medical system which was based on the practical and scientific information of various subjects like health, disease, anatomy, philosophy, engineering, and astrology. The use of Herbal formulation for the treatment of human diseases was the most important development in this Vedic medicinal system. Now Ayurveda had been developed

itself as a classic medical system for humans based on scientific knowledge and treatment of health problems by using medicinal herbs [10].

2.2 Sources of Ayurvedic literature

The first authentic information about the Ayurveda is available in Atharvaveda. Discussion about the human existence, physical and mental health, disease-causes and herbal treatment are described in the literature. **The main emphasis was given to tridoshas (vata, pitta and kapha.) and the use of medicinal herbs for the treatment of the diseases of body and mind.**

The fundamental texts of Ayurveda are “Samhitas” in which the knowledge of Vedas about the medicinal science of the human body and mind and its interring relationship is described. The two basic ayurvedic texts are:-

(i) CharakSamhita – Information related to Medicines

(ii) SushrutaSamhita - Information related to Surgery

Vagabhata’sAstanga- Hridaya is also important literature of Ayurveda. These three great documents of Ayurveda are known as ‘Brihatrayees’.

2.3 Basic Principle and Science of Ayurved

Ayurveda is an integrated science of health care and a balance between body and mind. “Balancing the physical, psychological and emotional characteristics of human beings” is the basic concept of Ayurveda. According to Ayurved, “Each person is unique with a specific Constitution or Prakriti and it is a unique fingerprint of an individual”. According to Ayurveda Human body is a matrix of the following factors [11].

(1) **Panchamahabhutas:** - Earth, water, fire, air and vacuum (ether).

(2) **Seven dhatus** :- Rasa, , Mansa, RaktaMeda, Asthi, Majja, Shukra

(3) **Three Malas:** - Faces, urine, and sweat

(4) **Agni:** - Biological fire which performs all Metabolic and digestive activities of the body

(5) **Tridosha:** - three life forces (Movement)Vata, pitta and Kapha

“Health is the equilibrium or balance among the tridoshas in the body, and their disequilibrium or imbalance would be the diseased-state or Vikriti” [12].

Ayurveda is based on the three types of energy which are vata, pitta and kapha. The Diagrammatic presentation of these energies is shown in **Fig (1)**.

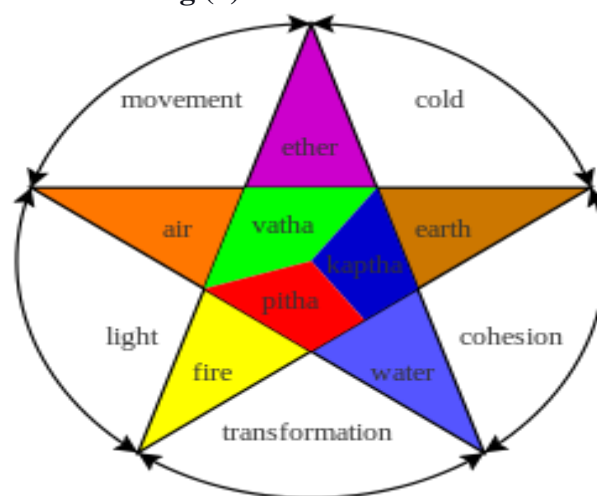


Fig. (1)Energies of the body

Three types of energy in the body are considered in Ayurveda:-

(1) **Vata** – The energy of movement which controls the activities related to blood circulation, motion, breathing, heartbeat muscle, and tissue movements. **“Balanced state of Vata energy will result in creativity and vitality. The imbalanced state of Vata creates fear and anxiety”**.

(2) **Pitta** – The energy of digestion and metabolism controls the metabolic activities of the body i.e. digestion, absorption, assimilation, nutrition. Temperature is an important factor associated with this energy. **“In a balanced state, pitta leads to contentment and intelligence while in imbalanced state of pitta causes ulcers and anger”**.

(3) **Kapha** – The energy of lubrication and structure which controls the body growth. The main activities performed by this energy have moisturized the skin, water supply to all body parts maintains the immune system and lubricate the joints and bones. **“Balanced condition of Kapha is required for the expression of love and forgiveness. An imbalance may lead to some psychological disorders like the feeling of insecurity, envy, etc”**.

The most important factor is the Equilibrium of these three Doshas which is the basic principle of Ayurveda. In normal conditions, Vata is more dominant and controls the other two energy Pitta and Kapha. The important factors which maintain the balance in a human body are – Aahar (food), Vihara (lifestyle), and Aushadhi (Medicine). Mental stress, unhealthy diet, and climatic changes can cause an imbalance in these three energies, so a balanced diet, maintain a proper lifestyle, and use of herbal drugs are included in the basic theme of Ayurveda [13, 14].

2.4 Current status of Ayurveda during global crisis COVID-19

In India, AYUSH MANTRALAYA recommends a self-care guideline for preventive healthcare measures and traditional immunity-boosting practices to improve and maintain general respiratory health. These are supported by Ayurvedic literature. In this challenging time when all over the world people are facing an epidemic viral infectious disease i.e. COVID-19, enhancing the body’s natural defense system (immunity) should be strong which can play an important role in maintaining optimum health. Ayurveda can be a strong immunity booster and can help to protect us against pandemic COVID-19.

There are many pieces of evidence to support that use of Ayurvedic medicines is better than Western medicine in case of chronic diseases also, only validation with advanced scientific procedures is required. The Use of copper pot for water-purification is recommended in Ayurveda because it has an antibacterial effect against many infectious bacterias i.e. *Vibrio cholerae*, *Shigella flexneri*, Enteropathogenic *E. coli*, *Salmonella typhi*, etc. Nowadays in **CORONACAL**, we are getting like such suggestions on social media also which are scientifically validated [15-16]. Our Prime Minister Narendra Modi suggested the people of the nation, continue the fight against the COVID-19 pandemic and appealed everyone to follow the guidelines of Ministry of AYUSH to help everyone build their immunity [16]. Ayushmantralaya also started some clinical trials against COVID-19, which are a joint initiative of AYUSH Ministry, Health Ministry, and CSIR (Council of Scientific and Industrial Research) with technical support of ICMR (Indian Council of Medical Research). The '**AYUSH Sanjeevani**' has also been launched to collect information about the usage of medicines advised by AYUSH to boost immunity [17, 18].

3. Immunity

Immunity means the state of protection against infectious disease. It provides the defense to protect from invading microorganisms i.e. bacteria, viruses, etc. “Immunology is a branch of biomedical science that covers the study of all aspects of the immune response in all organisms”. Generally, some people easily get affected by the disease due to climate change, changes in eating habits, on the other hand, some people remain healthy and do not get affected by any disease. It is due to the strong immune system of the body which counters the diseases caused by numerous microorganisms i.e. bacteria, viruses present in the

atmosphere and can enter into our body through the air respiratory tract. Our blood has the capacity to destroy these micro-organisms and this natural power of the body to protect against the microorganisms is known as “Immunity” [19-21].

3.1 Basic principle of Immunity

A wide network of cells, tissues, and organs that work together to protect the body is known as the “Immune system of the body”. WBC (white blood cells) or leukocytes are the cells involved in the defending system and also known “Fighters” as everyone knows. Leucocytes destroy the micro-organisms and their toxins and the process is known as Phagocytosis. Phagocytosis is one of the major functions of the immunity that keep the body free from various diseases. Leukocytes are produced in the thymus, spleen, and bone marrow so they are called the “Lymphoid organs”.Leukocytes are basically two types:-

1. **Phagocytes:** - These cells chew up the invading organisms i.e. neutrophils
2. **Lymphocytes:-** These cells help the body to destroy the invading organisms. Lymphocytes classified into two categories
 - (a) **B Lymphocytes** –They identify the invading microorganism and send defense against them.
 - (b) **T Lymphocytes** – They destroy the invaders which were identified by B lymphocytes.

3.2 Types of Immunity

Immunity in humans is classified in the following three types:-

- (a) **Innate Immunity** – It is the natural protection system of the body in which the external barriers of the body like the skin and mucous membranes are included and participate in the first-line defense help in the prevention of diseases.
- (b) **Adaptive Immunity-** It is the second kind of protection that develops throughout the lives. Lymphocytes are involved and it is acquired through vaccination against any diseases.
- (c) **Passive Immunity**– It is acquired from another source for a short time and known as "**Borrowed Immunity**". The best example is the mother's breast milk which provides immunity to her baby against infection during the early years of childhood.

3.3 Concept of Immunity in Ayurveda

Thousands of years ago Acharya Charaka described the concept of Immunity in Ayurveda and coined the term “**Vyadhikshamatva**”. He defined, “Ayus (life) as a combination of the body, sense organs, mind, and soul”. Veda has given much priority to live a healthy and joyful long life.

Vyadhikshamatva is a Sanskrit word where Vyadhi means disease and Kshamatva means to suppress or overcome. According to Ayurveda, Vyadhi is the non-equilibrium condition between **Doshas** (Vata, pitta &Kapha), **Dhatu**s (tissues systems), and **Malas** (excretory products of the body). These factors are responsible for maintaining the physical and psychological health of humans. “Vyadhikshamatwa means the factor which limits the pathogenesis and opposes the strength of disease”. [22, 23]

3.4 Immunomodulators

In ancient times medicinal plants have been used for the treatment of many diseases, caused by insects, fungi, bacteria, and viruses. Many pieces of evidence in human history proved this fact. It is due to the presence of some specific chemicals in them and effective as conventional drugs. These medicinal plants are effective against many diseases and disorders among humans and also known as, “Elixirs of life”. Many chemicals present in these medicinal plants i.e. flavonoids, alkaloids, terpenoids, polysaccharides, lactones, and glycoside products are responsible for the immunomodulatory properties of these traditional plants. “**Ethnobotany**” is the special branch of Botany in which the study of traditional plants and their medicinal

properties is conducted and also emphasizes to discover the effective method for future medicinal use [24, 25].

“Immunomodulators refer to those substances capable of inducing, amplifying, and inhibiting any component or phase of the immune system”. They are classified into two categories [26].

(i) Immunostimulators

(ii) Immunosuppressant

“Enhancement in the immune responsiveness is called Immunostimulation and reduction in the immune responsiveness is called Immunosuppression”. Several natural compounds have contributed to immunomodulatory properties. These medicinal plants are being used for the treatment of many diseases since ancient time. There are many natural compounds present in herbal plants that are used to influence the immune system that is known as “Immunomodulators” [27, 28].

According to the 2015-16 data, more than 300 plants have been identified for their therapeutic potential against many diseases and disorders. Out of them, 122 chemicals derived from plants and used in commercial drugs i.e. Bark of willow tree is very rich in salicylic acid, an active metabolite of aspirin, and has been used as a pain killer and antipyretic substance. Some other plants are used as a source of aspirin, digoxin, quinine, and opium, etc. as modulators of the complex immune system [29].

3.5 Ayurveda as Immunity Booster

Immunity of the body can be maintained by a nutritious diet, proper lifestyle, meditation, and the use of herbal medicines. In Ayurveda, many immunomodulators had been introduced which can improve immunity known as **“Rasayanas”**. These rasayanas are used to increase the Ojha, prevent the diseases, and to maintain the life span. **Acharya Sushruta** was stated this definition, “Ayurveda is the Knowledge of life which increases the life span. Ayurveda says the pure treatment is that which cures the disease without producing any other disease and which also provides physical, mental as well as social health” and adopted by **WHO** in 1948.

“Health is a state of complete physical, mental, and social spiritual well being and the absence of disease or infirmity. Health is a multidimensional state having four specific dimensions the physical, mental, social, and spiritual” [30].

Some common immunomodulators described in Ayurveda are:-

- (1) Amla (*Emblicaofficinalis*)
- (2) Guduchi (*Tinosporacordifolia*)
- (3) Haritaki (*Terminaliachebula*)
- (4) Brahmi (*Centellaasiatica*)
- (5) Kushmanda (*Benincasahispida*)
- (6) Shankhpushpi (*Convolvulus plurcaulis*)

Chavanprash is an important Ayurvedic formulated medicine advised to the people taken daily. Kushmanda and Shankhpushpi act on the CNS (Central Nervous System) and action to increase Ojha, counter weakness, and also increase memory. CNS drugs are directly related to immunity. The common immunity enhancer drugs acting on CNS are Amla, Guduchi, and Haritaki, etc. Some herbs like garlic (*Allium* family), mint (*Labiatae*), ginger (*Zingiberaceae*) and carrot (*Umbelliferae*) family contain phytosterols, saponins, flavonoids, triterpenes, and carotenoids having the potential of chemo-protection, antioxidant property and can stimulate the immune system [31,32].

4. Concept of improving Immunity by Ayurveda

“The ideal treatment is that which carries our disease but without creating any other disease”, it is the basic concept of Ayurveda. Modern allopathic drugs carry various side effects so generally, people prefer herbal medication nowadays. Plants that are rich in vitamin C, flavonoids, and carotenoids can be used for

enhancing immunity. The flavonoid-rich herbs are used for mild anti-inflammatory action. Garlic is one of the most important plants which is commonly used as a strong immunity booster and preserves the homeostasis of immune functions due to the presence of high sulfur content [33, 34].

5. The most effected age group by GlobalCovid-19 Crisis

The novel coronavirus originated in Wuhan (China) and within 2-3 months it has spread rapidly across the world. The WHO (World Health Organization) has declared it a pandemic. No vaccine and proper medication are available for the treatment, social distancing, and lockdown the countries are the most widely adopted strategy for the control of transmission of Coronavirus [35, 36].

The communication rate of COVID-19 is dependent on two factors

- (i) The age structure of the population
- (ii) The frequency of contacts

According to the statement of WHO, “Elderly people are at a higher risk of COVID-19 infection due to their decreased immunity and body reserves, as well as multiple associated comorbidities like diabetes, hypertension, chronic kidney disease, and chronic obstructive pulmonary disease”. The graphical representation age-wise of the severity of Covid-19 is shown in **Fig. (3)** (WHO data)

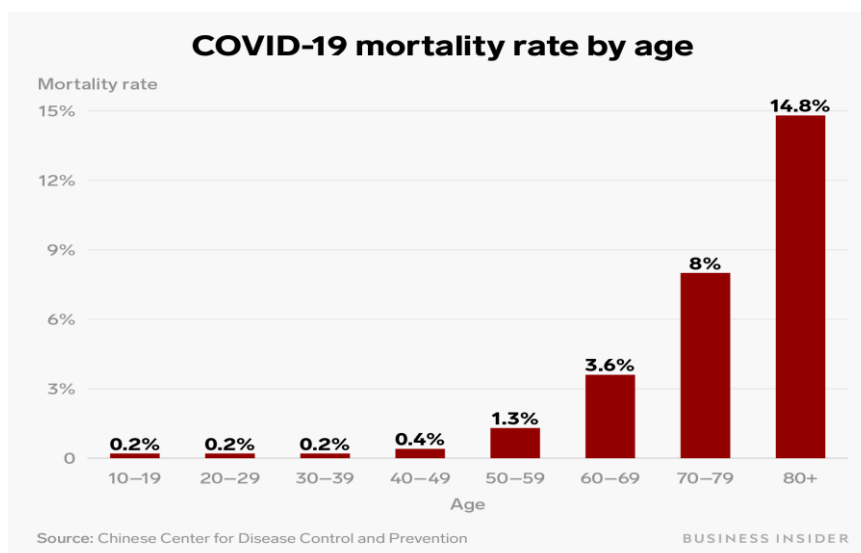


Fig. (3) Mortality rate in Corona cases

6. Guidelines of Ayush Ministry to boost immunity against pandemic Covid-19

About 180 countries of the world are facing this global Covid-19 crisis and no medicine or vaccine is available to cure this highly infectious disease. In this situation, the statement “Prevention is better than cure” seems really true so social distancing and take preventive measures to boost our immunity are the best way to protect ourselves against pandemic Covid-19. Ayurveda can play a vital role in boosting the natural defense system of body or immunity and in maintaining optimum health [37-39].

Ayush Ministry Guidelines for Immunity

(A) General Measures

1. Drink warm water frequently throughout the day
2. Meditation, Pranayam and Yogasana practice should be included in routine life for at least 30 minutes
3. Regular use of Spices like Haldi (Turmeric), Jeera (Cumin), Dhaniya (Coriander) and Lahsun (Garlic)

(B) The simple way to Boost Immunity

1. 10gm Chyavanprash should be taken daily. Diabetic people should take sugar-free Chyavanprash.

2. Drink herbal tea made from Tulsi, Dalchini, Kalimirch, Shunthi, and Munakka- is preferred to normal tea once or twice a day.
3. Golden Milk (hot Milk with turmeric) should take once or twice a day.

(C) Guidelines for Corona symptoms

1. Steam inhalation with fresh Pudina (Mint) leaves or Ajwain (Caraway seeds) can be practiced once in a day.
2. Lavang (Clove) powder mixed with natural sugar/honey can be taken 2-3 times a day in case of cough or throat irritation.
3. These measures generally treat normal dry cough and sore throat. However, it is best to consult doctors if these symptoms persist.

Ayurvedic Rasayanas (Herbal medicines) are also used in nanosize since ancient times as Suvarna-bhasma with better bioavailability and absorption when it is mixed with black pepper powder and ghee for the treatment of sore throat and common respiratory problems. During this COVID-19 crisis, a co-ordinating network of AYUSH healthcare authorities and local health authorities may be proved an effective way to fight against this severe infectious disease. [40-42].

7. Conclusion

Ayurveda is a potent and powerful weapon against COVID-19; it can be applied for the prevention as well as for the treatment of this infectious disease [43-45]. According to Ayurved some specific herbs such as tulsi, black pepper, cinnamon, shunthi (dry ginger) and raisins are helpful to increase the body's immunity against harmful viruses. Meditation and regular yoga practices can make our body healthy, full of positivity, and joyful. Ayurveda is the world's oldest health care system originated in India and is used by the people to fight against the COVID-19 crisis. It is the time when all the countries of the world are facing and fighting against this pandemic crisis and the world community is looking forward to us how we handle the crisis using our own resources. Implementation of the suggested action plan of the AYUSH Ministry may benefit the nation greatly and we will be succeed to defeat this Global pandemic crisis.

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