

Role of Medicinal Plants in the Prevention of Covid-19 Pandemic

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Abstract

Coronavirus disease 2019 (COVID-19) is a life-threatening global health scenario. The WHO (World Health Organization) has announced this disease as global issue. The severity of this disease causes highest death rates from December 2019-October 2020 world wide. There is an urgent need to develop medicines and vaccine to prevent the immune system of human. Medicinal plants and plant based drugs play a major role in preventing by provoking the immune system. This review discusses about the major global issue pandemic coronavirus disease (Covid -19) and the traditional medicines as preventive and curative agent in treating this global health issue.

Keywords: COVID-19, medicinal plants, preventive measures.

Introduction

In the beginning stage the spreading of coronavirus was identified through the blood, sputum sample and the excreta of diseased patients. Coronavirus virion particles measured the length of 80–140 nm protein spikes like projection around the virion layer, were observed through the electron microscope. The arrangement of corona virus is single-stranded RNA with 30 kb in length, gene sequence matched with previously found coronavirus gene sequence. RNA Polymerase is responsible for higher proliferation rate of coronavirus.

Coronavirus is novel virus emerged from the virus causes respiratory issues already present hence its mutation level is unexpectedly high. With structure identification it can be matched and given for sequence similarity by using the bioinformatics tools such as CLUSTALW, BLAST and other sequence similarity tools and with the basic identification tools we can design a drug against the deadly virus. The use of herbal plants to withstand human health is a biggest challenge according to doctors in ayurveda, siddha to find a medicinal plant which are of with many complex molecules those are not easy to derive. The medicinal drugs can be derived from turmeric, ginger, cinnamon, cloves, tulsi, fenugreek and fennel seeds. These are important man-found medicines to cure many complicated health ailments. With the aid of scientists and researchers there is an urgency to find the natural ways to cure this disease. And to make strong anti-COVID-19 herbal medicines from endless plant materials present. Undoubtedly these medicinal plants, aids in reducing the patients suffering from illness through the COVID-19.

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Use of Medicinal Plants: Necessity to find the plants which are different in their dosage and the use of plant parts some of the examples are: Thumbai poo (*leucas aspera*), karpooora valli (*Coleus amboinicus*), Tulsi (*Ocimum tenuiflorum*), Gentian (Bitter root), Goldenseal, Ginseng Musumusukkai (*Ocimum tenuiflorum*) [4].

Ginger (*Zingiber officinale* Rosc): Ginger (*Zingiber officinale* Rosc.) belongs to the family Zingiberaceae. The anti-oxidant and anti-arthritic compounds of ginger and its components utilized in various research oriented tests. Strengthening the body's defense mechanism by improving the antioxidant property will undoubtedly cure many chronic diseases and disorders 6-Shogaol obtained from ginger is the important compound aids in relieving the patients from respiratory issues. The alkaloid irritant taste from ginger also aids in clearing respiratory issues thus it is also known to help preventing from COVID-19 [5].

Curcumin (*Curcuma Aromatica*): Turmeric consists many medicinal properties includes, anti-cancer, antiseptic and antibacterial and anti-fungal which helps in hindering the molecules responsible for the diseases. Its antioxidant activities helps us in cleansing and repairing the digestive disorders. Anti-thrombotic properties of Curcumin may also helps in clearing the mucous in lungs so that relieving the oxygen supply to the entire body [6].

Ashwagandha (*Withania Somnifera*): The natural product Withaferin A is isolated from Ashwagandha (*Withania somnifera*) mostly obtained to treat many diseases such as common cold, gynaecological disorders, and even infertility issues. It possess antiviral activity against many viral diseases and also against COVID-19 [7]. Molecular docking studies shows that as per YASARA scoring out of 28 compounds from *W.somnifera* (Ashwagandha) only the major compounds Withanoside V and Somniferine showed significant binding affinity as compared to native coronavirus. Withanoside V showed highest binding energy of 10.32 kcal/mol [9].

Liquorice (*Glycyrrhiza Glabra*): The glycyrrhizin is a compound present in licorice plant for covid-19 is not clearly studied. This compound Glycyrrhizin inhibiting the tyrosine kinase enzymatic cellular signalling pathways responsible to develop tumor and induce cancer cell proliferation in uncontrollable manner. A glycone metabolite 18 β glycyrrhetic acid

up-regulates the gene expression of the molecules helps in increasing the macrophages tremendously which engulfs the antigen. Glycyrrhizin helps in increasing the nitrous oxide level capable to destroy viruses. The research carried on this plant shows that glycyrrhizin a natural compound enhances the level of nitrous oxide synthase it induces the high rate of apoptosis in the vero cells in culture medium. HIV-1 patients and patients with chronic hepatitis C virus are treated with the natural compound glycyrrhizin shows the positive recovery graph. However the toxic level of this particular compound is also studied in different ways because the variation in dosage level can lead to unexpected complications in Covid patients as well as normal sick patients.

Tulsi (*Ocimum Sanctum* L): In Ayurveda treatment tulsi plant is majorly called as holy plant and holy water for that ability of healing and compounds it possesses and treats major health disease and disorders. Even in the covid period people are advised to take handful of basil leaves and boiled water with basil leaves. health complications. In the Indian medicinal system tulsi leaf extracts are known to cure bronchitis, rheumatic arthritis, and asthma. It is recorded in the research that tulsi plant has the binding property to destroy covid-19 deadly disease [11].

Cinnamon (*Cinnamomum Zeylanicum*): Cinnamon (*Cinnamomum zeylanicum*, and *Cinnamomum cassia*) Lauraceae family one of most important tree containing bark with endless medicinal compounds. By considering the medicinal properties of the bark it is used in Indian cooking everyday to cure digestive disorders. Cinnamon primarily contains essential oils and other derivatives, such as cinnamaldehyde, cinnamic acid, and cinnamate which are taken to heal gynaecological disorders and enhancing the immune system by keeping the reproductive organs healthy. People often use it for weight loss procedures by putting it in boiling water and taken orally. It is also used for cosmetic purposes in ancient medicines to cure pimples and clear people with many skin infections. [13].

Baikal Skullcap (*Scutellaria Baicalensis*): Baicalin, a major constituent of the plant, Bioactive compounds such as baicalin, wogonoside, are extracted for medicinal purposes from the root of this important medicinal plant *S. baicalensis*. It has been taken orally to treatment many digestive disorders such as diarrhea, vomiting and gastric problems. It is also known to

treat respiratory problems that's why it is it has been researched and revealed that it is a potent medicine against coronavirus causing COVID-19. People with insomnia and hypertension are advised to take this medicinal drug. This baicalin plays a major role in inhibiting the proliferating the HIV-1 virus [14].

Tinospora Cordifolia (Giloy, Guduchi): Giloy or Guduchi, scientific name *Tinospora cordifolia* is one of the most flexible restoring bushes. This is the simple herb utilized as a part of Ayurvedic medication. It is considered as best rasayana in its strong flexibility. It consists many biologically important phytochemicals including lactones, alkaloids, glycosides, steroids, sesquiterpenoid, diterpenoid, aliphatic compounds, phenolics, polysaccharides and flavonoid which play immunomodulatory activity in human body. It has anti-diabetic, antioxidant, Anti-inflammatory, antiperiodic, antispasmodic, anti-arthritic, anti-allergic, antimicrobial, anti-osteoporotic, antitoxic, anti-stress, anticancer, anti-HIV, wound healing. Its alkaloid components including tinosporin, tetrahydropalmatine, choline, palmatine and magnoflorine are in high demand, it also has protective role against aflatoxin induced nephrotoxicity. This herb has broad activity plays important role to improve our immune system to fight against infectious diseases. Generally, extract (juice) of Giloy can be taken orally. The following herbal formulation is found to be helpful for preventing and curing COVID-19 disease [15].

Neem (Melia Azadirachta L.): Neem has strong bitter taste known to cure many health disorders, taken orally in empty stomach to flush out the toxins and kill worms in the stomach. The juice extract has been used to treat many skin infections. It is well for its anti-plasmodic activity against plasmodium spread by mosquitoes. Neem usage in traditional ways of curing diseases for more than two thousand years. Urinary, respiratory and digestive systems can be treated with the use of neem extracts to detoxify and enhance its functioning capacity. The bitter taste of neem helps in clearing the mucous of lung while having common cold by the way of steaming and taken as preventive medicine for COVID-19 [16].

Conclusion

Traditional plants has many beneficial properties to explore, conducting extensive research necessary for experimenting and development for the healthy society. The proper use of medicinal plants can heal and help people with many disorders and diseases. The use of

modern medicine can be used for emergency cure and its side-effects are also known and sometimes become incurable. Traditional herbal medicines help people in treating skin diseases such as psoriasis, leprosy and digestive disorders such as dysentery, gastric and even many types of cancer. The medicine from such herbal plants are used in many research institutes to treat deadly diseases such as cancer, cardiac arrest, memory loss, anaemia, insomnia. During this COVID scenario all these are used as preventive agent and are followed till date. Many plants possess beneficial antiviral compounds now it is used regularly by people to treat COVID disease. The proper utilization of traditional medicines against COVID-19 Pandemic disease would help people in many ways to safe guard and elevate the immune system.

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