International Journal of Research in Pharmacy and Allied Science (IJRPAS)
Published by Ideal Publication
Available at https://idealpublication.in/ijrpas/

Review on Herbs and Medicinal Plant Used in Management of Covid-19

Sanika Naresh Gaikwad *, Priyanka Panth, Komal Bhau Patil, Tanmayi Bharat Shinde, Bhaminee Madhukar Patil

M.S College Of Pharmacy, Gaurapur-Kudus Rd, Dist. Palghar, Maharashtra 421312., India.

Article History

Received: 30/11/2023
Revised: 05/12/2023
Accepted: 15/12/2023
Published: 31/12/2023

Corresponding Author:
Sanika Naresh Gaikwad

Email ID:
sanika08@mscollegeofpharmacy.in

Abstract: Recently, the coronavirus (COVID-19) pandemic is a chief public health disaster caused by serve acute respiratory syndrome. Herbal medicine has been proven effective in controlling infectious diseases, such as SARS-COV-2, and may be a potential alternative to modern medicine in managing COVID-19. Traditional medicine, such as Siddha, Unani, Ayurveda, yoga, naturopathy, and homeopathy, is used alongside modern medicine and vaccinations in India for COVID-19 management. The lack of effective SARS CoV-2 therapeutics has led researchers to focus on plant-based approaches, as many drugs are derived from plant materials or their bioactive constituents. This has led to significant interest in detecting potential anti-COVID-19 herbal medicines, as they have shown promising efficacy against various viruses by reinforcing immunity. In the present work, we have focused on plant-based remedies with promising anti-COVID-19 activities.

Keywords: COVID-19, Traditional medicine, Ayurvedic medicine, Antiviral herbs.

INTRODUCTION

COVID-19, also known as SARS-CoV2, is an international outbreak of acute respiratory illness that began in Wuhan, China, on March 11, 2020. The virus spread rapidly across 177 countries and 154,000 facilities, with the WHO recognizing it as the greatest global health crisis since the influenza pandemic[i]. As of September 2023, over 770,085,713 confirmed cases and 995,273 deaths were reported worldwide. SARS-CoV-2, an enveloped RNA virus belonging to the Corona viridae family, causes respiratory diseases in humans using the same receptor used by SARS-COV-2. In severe cases, it triggers an inflammatory immune response and releases pro inflammatory cytokines, leading to cytokine storm, multiple organ dysfunction, and acute respiratory syndrome[ii].

Coronaviruses are a group of viruses that cause respiratory illnesses and spread quickly through cough or sneezing droplets containing virus particles. They contain spike proteins that bind to the mucins in the pulmonary pathway, initiating viral infection[3]. The coronavirus genome is located within a capsid, which forms in the presence of replicative polymerases[4]. Viruses with nucleocapsids have ribonucleic acid (RNA) genomes but cannot replicate without reverse transcriptase enzyme. The envelope protein protects the virus from the immune system and determines its transmission rate[iii].

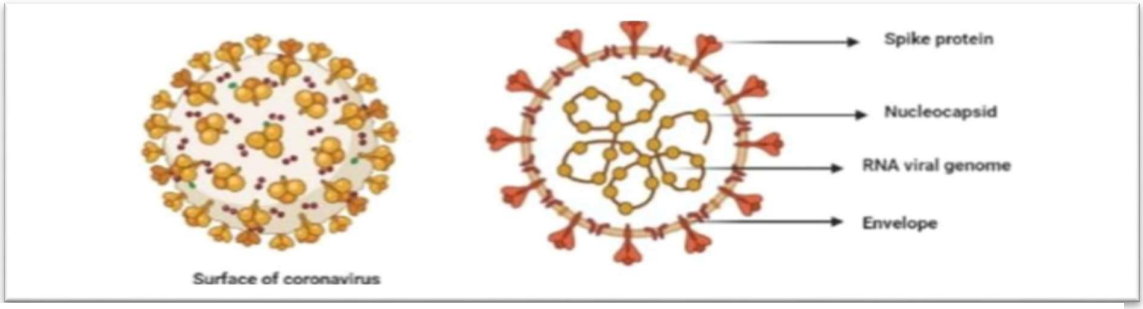

Figure 1: structure of corona virus.

Human-to-human spread of SARS-CoV-2 is largely reported in hospitals, families, and communities. The principal way of person-to-person transmission is droplet transmission. In addition, SARS-CoV-2 infection can spread via direct contact and fomite exposure. In addition, contact with asymptomatic carriers is a possible route to transmit SARS-CoV-2[4]. Owing to the exceptional pace with which SARS-CoV-2 spread, the airborne transmission also merits meticulous evaluation. In addition, SARS-CoV-2 was detected in the fecal sample, even urine and saliva of corona-ill patients. Therefore, fecal oral transmission could also be the possible route of viral transmission. Vaccine is available to comb act this pandemic, but delivery remain a barrier, particularly in under underdeveloped or developing nation. COVID-19 caused a wreak ling havoc for the world's population. Every country has tried to find the breakthrough for these viruses involving antiviral treatment, plasma therapy and different vaccines[6]. Herbal medicine has been proven to be effective in controlling infectious diseases, such as SARS-COV-2, and may be a potential alternative to modern medicine in managing COVID-19. People worldwide, particularly in Asian countries like Japan, India, and China, have used herbs to alleviate symptoms of various diseases since ancient times. Systemic reviews, case reports, and observational studies have been conducted to study the effectiveness of herbal medicine in COVID-19 treatment[7].In India, traditional medicine, including Siddha, Unani, Ayurveda, yoga, naturopathy, and homeopathy, is used alongside modern medicine and vaccinations for COVID-19 management[8] . The lack of effective SARS CoV-2 therapeutics has led researchers to focus on plant-based approaches, as many drugs are derived from plant materials or their bioactive constituents. This has led to a significant interest in detecting potential anti-COVID-19 herbal medicines, as they have shown promising efficacy against various viruses by reinforcing immunity[9 10].

Hence this review aims to present the most important Indian and some other medicinal herbs and ayurvedic medicine which possesses potential antiviral activates regarding COVID-19.

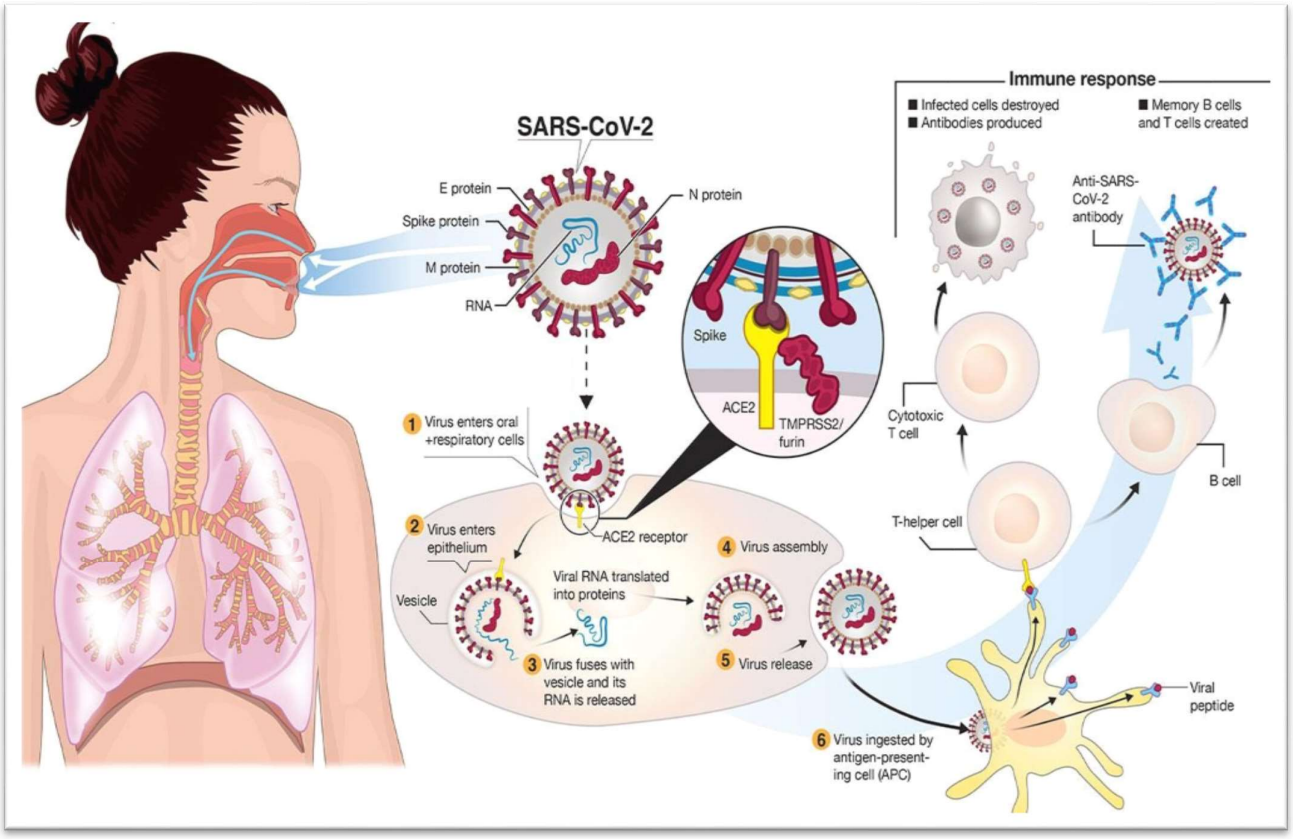

Figure 2: spreading of corona

AYURVEDIC MEDICINE TO TREAT COVID-19

Ayurveda, an ancient medicinal network, is widely used to manage infections without adverse effects. It originated in India and has various treatment approaches for complex ailments. Ayurveda health care experts are aware of microorganisms and their infections. The identification, isolation, and characterization of bioactive phytochemicals in medical herbs could help combat infections. Ayurveda medicines play a crucial role in the pandemic by increasing immunity and treating respiratory disorders. Steam inhalation with fresh neem, clove, or tulsi leaves can reduce cough and relieve blocked noses. Immunity can be increased with decoctions made from Tulsi, Dalchini, clove[11].

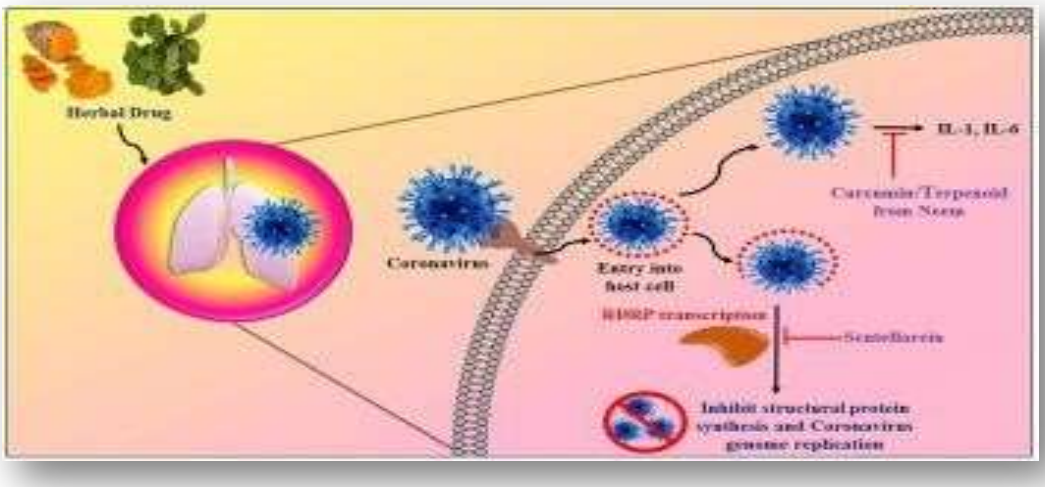

Figure 3: action of herbs on coronaviruses

Table no 1: Herbal drug in covid-19.

Sr. no	Common name	Botanical name	Chemical constituents	Moa ofdrug	available
1	Ginger	zingiber officinale zingiberaceae	Gingingerol, gigerone,6-gingerol, zingiberone.	Affinity forSARS-CoV-2 S-spike protein as well as papain-like Protease(PLpro).	StatesofIndia, Karnataka, Orisa Assam.
2	Tulsi	Occimum sanctum lamiaceae	Linalool, oleanolic acid, ursolic acid, rosmarinic acid, eugeno	Covalently binding orirreversibly suppressed protease enzyme of SARSCoV- 2.	India(Himalaya middle East)
3	Ashwgandha	Withania somnifera solanceae	Withanolide, withaferin-A,	Disruption of electrostatic interactions taking placebetween protein RBD and SARSCoV-2	Sub-tropical region. Rajasthan, Maharashtra, Gujarat.
4	Neem	Azadirachta indica Meliaceae	Azadirachtin, azadirone	Binding efficacy withmain proteases of SARS- CoV-2	Southern tip of Kerala, Himalaya's hill. Tropical region of India.
5	Guduchi or Giloy	Tinospora cordifolia Menisper-Maceae	Berberine, choline, tinocordis	Main protease enzyme of COVID-19 Is inhibited	Tropical regions of India from kumaon to Assam.

6	Turmeric	Curcuma longa Zingiberaceae	curcumene, curcumenone curcone, eugenol,	Blocks the interaction of virus and host cells. Binding Proteins of COVID-19.	Andrapradesh, Tamilnadu, Orisa Karnataka, west Bengal.
7	Amla	Phyllanthus emblica Phyllanthaceae	Phyllaemblicin- B, phyllaemblinol, and phyllaemblicin- G	Affinity to COVID-19 helicase and spike proteins	In tropical regions of India (Uttar Pradesh Tamil Nadu
8	cinnamon	Cinnamomum zeylanicum Lauraceae	cinnamaldehyde ,cinnamate, cinnamic acid	Interference with binding as well as recognition sitesof SARS- CoV-2.	Native of Sri Lanka. In India (Western ghat of Kerala).
9	yasthimadhu	Glycyrrhiza glabra L Fabaceae.	glycyrrhizin, glycyrrhizic acid, glycyrrhetic acidand glabrine	Reduces the expression of TMPRSS2 And ACE2.	Subtropical region North West Indian.
10	Garlic	Allium sativum Amaryllidaceae	Allicin, allin, flavonoids, saponins	Suppress SARS-CoV-2 by Creating a hydrogen bond.	Indian state of Rajasthan, Uttar Pradesh, Gujarat.

GINGER

Zingiber officinale, commonly called ginger, belongs to the family of Zingiberaceae It is mostly used for anticancer, antiviral, antidiabetic, antimicrobial, antioxidant, nephron-protective, sedative, hepatoprotective, anti-inflammatory, analgesic, antiemetic and antitumorigenic treatment. Ginger is a natural immunomodulator that can enhance immunity and provide great defense against the COVID-19 virus[12 13].

TULSI

Ocimum sanctum is commonly called Tulsi4. It belongs to the family of Lamiaceae. Oils extracted from the leaves and inflorescence of Tulsi have properties as expectorants, analgesics, antiemetic's, and antipyretics; stress reducers and inflammation relievers and as anti-asthmatic, hypoglycaemic, hepatoprotective, hypotensive,hypolipidemic, and immunomodulatory agent14.

ASHWAGANDHA

Ashwagandha is an adaptogenic botanical grown in India which is known for its ability to balance, energize, rejuvenate, revitalize and is a well-known herbal tonic that is also used for cardiovascular diseases. Various Studies concluded that it also possesses the properties of antioxidant, anxiolytic, performance enhancer, memory boosting, antiparkinsonian, antidote, anti-inflammatory, and anti-stress[15 16].

NEEM

Azadirachta indica is commonly called 'Indian Lilac' or Neem A.indica which are reported are antibacterial, antiviral, antifungal, anti-inflammatory, antipyretic, antiarthritic, hypoglycaemic and antitumor, etc. .also leaves of neem might possess COVID-19 inhibiting properties[17].

TURMURIC

Curcumin is a traditionally used medicinal plant in India found in rhizomes of the turmeric plant, Curcumin longa. it have pharmacological activities like antidiabetic and related disorders, anti-angiogenic, antioxidant, antibacterial, antiviral, etc curcumin has become a potential inhibitory agent that blocks the interaction of virus and host cells of COVID-19[18].

AMLA

Commonly known as Amalaki or Indian gooseberry rich source of Vitamin-C. It contains low molecular weight hydrolysable tannins. It also contains ellagic acid, linolic acid etc. as chemical constituents showing activities against carcinogenesis, it also shows cytoprotective, and anti-inflammatory, anti-microbial, antioxidant and immunomodulator activities[19].

CINAMMON

Cinnamon is one of the foremost important herbal drugs and has been widely employed in Asia for quite 4000 years. It has antimicrobial, antioxidant, antiparasitic properties. Quinine is the most important constituent of Hydroxychloroquine drug which is used for the treatment of malaria and nowadays it is used to treat the COVID-19 infections by glycosylation ACE 2 spike proteins and blocks the entry of COVID-19 virus[20 21].

YASTHIMADHU

Commonly known as Yashtimadhu or Liquorice 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. The plant is commonly used in the treatment of common cold, sore throat, vomiting, acidity, gout, weakness, joint pain, ulcer, skin-related diseases[21].

GARLIC

Commonly known as Lahasun or Garlic contain alliin, vitamins (folic acid, niacin, riboflavin, thiamine, vit.c), allicin, allisatin etc. as major chemical constituents. It has anti-inflammatory, antimicrobial activity. It is mentioned as Rasayana in Ayurvedic classics and it's indicated for Shwasa, Kasa etc[22].

FUTURE STUDY

Herbal medicines can be used to treat various illnesses; they can be considered a good platform for dealing With COVID-19. Herbs have been reported to be very effective in curing severe acute respiratory syndrome coronavirus-2, as proven through multiple scientific studies, like molecular docking, in vitro and in vivo. Researchers suggested that if this approach of herbal therapy brought into practice and

validated the rapid immunological response of such herbs or extracts could be effective and timely in the fight against COVID-19, Due to the above reasons, the future of herbs in COVID-19 management is very beneficial. They might be effective in treating new strains of Coronaviruses, including Omicron, Delta, Micron, and Neo-COV strains. And a few other antiviral agents have been approved by the World Health Organization (WHO) for the treatment of COVID-19, but the traditional herbs cannot be evaluated for their effectiveness. The scientific evidence further supports the herbal consumption for some of the viral infectious diseases to maintain the overall immune health of people who are infected with COVID-19.

CONCLUSION

We can finally conclude that several ayurvedic herbs which are available in India possess antiviral properties which are beneficial for prevention and treatment of COVID-19 infection. Since herbal medicine are highly efficient due to their histories, for managing diseases they can be considers as a possible way for curing this prevalent aliments. Various herbs like ginger, neem tulsi, curcumin, have been effective for prevention of these dieses. Therefor herbal medicine has a very beneficial impact on the health of COVID19 patients and for other infection .the traditional practice and scientific evidence of the above described herbs and their phytochemicals against the lethal viral infection supports the natural products for drug discovery particularly against coronaviruses.

ACKNOWLEDGMENT:

I would like to extend my gratitude towards my guide Mrs. priyanka panth mam, who guided me and provided me moral support throughout the preparation of the manuscript. I would like to thank my Sister miss Mansi Gaikwad, and my friends who provided me with their full support for this review article.

REFERECE

1. Minal Ghule, Potential of herbal remedies for the treatment of COVID-19; Journal of Developing Drug, Vol 11 Iss No: 1000178.
2. Hyder M Al Kuraishy, Omnia Momtaz Al- Fakhrany, Engy Elekhnawy, Ali l. Mhammad alorabi, Michel de Waard, Sarah M, alboogami and Gaber Elsaber Baitha. Traditional herbs against COVID-19; back to old wepon to combact the new pandemeic.european journal of medical research.
3. ElekhanwyE, Negm WA.The Potential application of probiotic for the prevention of COVID-19. Egypt j Med Hum Gene.2022; 23(1):1-9.
4. Demeke CA, Woldeyohanis AE, Kifle ZD. Herbal medicine use for the management of COVID-19: a review article. Metabolism open, 2021; 12:100141.
5. Su W-W, et al. The Potential application of the traditional Chinese herbs exocarpium Citri grandis in the prevention and treatment of COVID-19. Tradit Med Res. 2020; 5(3):160-6.
6. Omkar A. Devade, Rohan Londhe, Namrata Rathode, Jyoti Kupate, and Nikhil Meshram: Ayurvedic

remedies of COVID-19 int.J. pharma.sci.Rev.Res.70 (2).

7. Ling Ang, Eunhye Song, Hye Won Lee and Myeong Soo Lee, Herbal Medicine For the treatment for coronavirus Disease 2019 (COVID-19): A Systematic Review and Meta- Analysis of randomized controlled trial. Clin.Med. 2020, 9, 1583.
8. Suntar l. importance of ethno pharmacological studies in drug discovery: role of medicine plant, Phytocom Rev.2020; 19(5):119-209.
9. Alam S, et al. Traditional herbal medicine, bioactives metabolism of action, Front Pharmacol.2021.
10. Zeng F, et al. Association of inflammatory markers with the severity of COVID-19; a meta- analysis .Int J infects Dis.2020; 96:467-74.
11. Ali B, Blunden G, Tanira M, Nemmar A. Some phytochemical, pharmacological and toxicological properties of ginger (Zingiber officinale Roscoe): A research . Food and Chemical Toxicology. 2008;46(2):409-420.10.1016/j.fct.2007.09.085.
12. Krishnapillai N. medicinal value of ginger (zingiber officinale) in Jaffna. Acta Horticlturae. 2005;(680):83-86. 10.58977/actahortic.2005.680.10.
13. Goothy SSK, et al. Ayurveda holistic lifestyle approach for the management of coronavirus disease (COVID-19); possible role of tulsi. Lnt J respharma sci 2020.
14. Upadhyay R. Tulsi: A holy plant with high medicinal and therapeutic value. International journal of green Pharmacy Mar 201;11(1):18-25.
15. Vetvicka V, Vetvickova J. Immune enhancing effects of WB365, a novel combination of Ashwagandha (*Withanian somnifera*) and Maitake (*Grifola frondosa*) extracts. North American Journal of Medical Sciences. 2011;18:320-324.
16. Joshi K. Study of Ashwagandha (*withania somnifera dunal*) IJPBA,Jan –Feb,2016;7(1):51-55.
17. Alzohairy M. Theraputicus Role of Azaridca Indica(neem) and Their Active Constituents in Diseases Prevention and Treatment Evidence- Based Complementary and Alternative Medicine .2016-11.10.1155/2016/738250.
18. Alsamyadi A, Jaber N, Pharmacological aspects of curcumin: review article. International Journal of Pharmacognosy. E-ISSN: 2348-3962, P-ISSN: 2394-5583. 0.13040/IJPSR.0975-8232.IJP. 5(6).313-326.
19. Sastry, J.L.N, Dravyaguna Vigyana, Chaukhamba Orientalia, Varanasi, Voll-11, 2010,pg-220-224.
20. Eiden F. Chem Inform Abstract: Quinine and other cinchona Alkaloid, Part 3. From Total Synthesis of Quinoline Cinchona Alkaloid via preparation of more active Antimalarial to the investigation of the indole cinchona Alkaloid. Chemlnform.2010:30(21):44-50.10.1002/chin. 199921289.
21. Nugraha R, Ridwansyah H, Ghozali M, Khairani A, Atik N. Traditional Herbal Medicine Candidates as Complementary Treatment for COVID-19: A Review of Their Mechanism, Pros and Cons. Evidence based Complementary and Alternative Medicine.2020;31:1-12. 10.1155/2020/2560645.
22. Sastry, J.L.N, Dravyaguna Vigyana, Chaukhamba Orientalia, Varanasi, Voll-11, 2010,pg-152-155.