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Research Article

Antimicrobial Potency of Ayurveda Principle based HSP Mixture for Gargling, Steam Inhalation, and Nebulisation in Prevention and Early Management of SARS-COV-2 Disease

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A B S T R A C T

Introduction: The SARS-COV-2 disease has become the strongest among all the deadly respiratory diseases in taking the lives of lakhs of humans. The current study adopts the Ayurvedic principle of *Samprapti Vighatana* i.e. arresting the pathogenesis, through the usage of a novel self-formulated medicine powder named *Haridradi* Steam Powder (HSP) which is an anti-microbial decoction used for gargling, steam inhalation therapy, and nebulisation in the prevention of SARS-COV-2 disease by reducing the viral load in patients.

Methodology: Haridradi Steam Powder (HSP) containing decoction for gargling, steam, and nebulisation by adding 3% normal saline were prepared and given to the -participants as per self-made protocol i.e. gargling was advised for primary contacts, asymptomatic patients, and healthy persons as a preventive tool. High-pressure steam inhalation was advised for mild to moderate symptomatic patients and 3% normal saline nebulisation was advised for moderate symptomatic patients.

Results: Out of the total of 30 cases, comprising 22 primary contacts, 3 HRCT atypical viral pneumonia with severity score from 8 to 16, 3 RT-PCR positive patients, and 2 RT-PCR positive patients with HRCT score, a marked improvement was seen in more than 20 subjects within a short span of time.

Conclusion: The treatment formulation HSP Mixture is found to be effective yet simple, safe, and cost-effective, and is used in different therapies in the prevention and management of early SARS-COV-2 disease.

Keywords: HSP (*Haridradi* Steam Mixture), SARS-COV-2 Disease, *Samprapti Vighatana*

Introduction

Since centuries, Ayurveda has been providing effective curative measures for the management of such diseases and encompasses a wide range of therapeutics to get rid of such diseases. The current study adopts the Ayurvedic principle of *Samprapti Vighatana* i.e. arresting the pathogenesis, through the usage of a novel self-formulated medicine powder named *Haridradi* Steam Powder (HSP) which is an anti-microbial decoction used for gargling, steam inhalation therapy, and nebulisation in the prevention of SARS-COV-2 disease by reducing the viral load in diseased patients. The objective of this experiment was to analyse the efficacy of the combination of *Haridradi* antimicrobial gargling, steam inhalation therapy and herbal antimicrobial nebulisation including 3% normal saline on mild to moderate SARS-COV-2 disease.

Materials and Methods

Haridradi Steam Powder (HSP) containing decoction for gargling, steam, and nebulisation by adding 3% normal saline therapies were prepared and given to patients as per self-made protocol. Gargling was advised for primary contacts, asymptomatic patients and healthy persons as a preventive tool. High-pressure steam inhalation was advised for mild to moderate symptomatic patients and 3% normal saline nebulisation was advised for moderate symptomatic patients. *Haridra* (*Curcuma longa* Linn.) popularly known as turmeric is the main ingredient in HSP.

Preparation of Medicine - A. Medicated decoction preparation for gargle - ¼ TSF of *Haridra* (turmeric), and *Saindhava lavana* (black salt) were added to 250 ml of water and boiled till a decoction is prepared. This lukewarm decoction preparation was advised for oral rinsing and gargling for 15 minutes. B. Medicated steam preparation - In a pressure cooker, ¾ TSF of *Haridradi* powder (turmeric powder, black salt) was added to 2L of water, the safety valve was replaced with the rubber gas pipe, and whistle and rubber gasket were put. This was kept over medium flame till steam was generated. As a safety precaution, water spilling from the rubber pipe was reduced by letting down the opening of the pipe towards the floor to drain the extra hot water present in the pipe. Steam was to be inhaled from the mouth for 8-10 minutes.

Haridra contains curcumin, a chemical substance that has anti-viral effects against different respiratory viruses. Inosine monophosphate dehydrogenase (IMPDH) is an enzyme used for targeting different viruses and cancer cells. The active principle process[1] different bioconjugates of this curcumin are potentially best against different viruses like PIV-3, HSV, FLOCK HOUSE VIRUS, and Respiratory Synctial Virus.[2]

The active principle curcumin of Haridra has shown antiviral activity over influenza viruses like PR8, H1N1, and H6N1.[3]

SARS-CoV-2 inoculation and viral replication in humans host occur mainly through three major proteins and enzymes. These proteins are the papain-like protease (ACE2), spike protein (TMPRSS2), and the 3 chymotrypsin-like protease (3CLpro) (Figure 1).

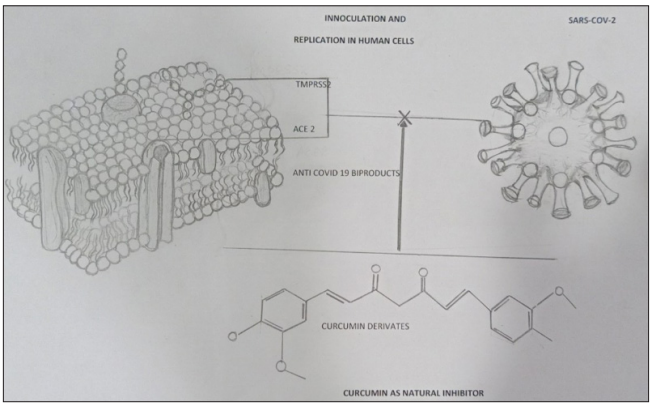

Figure 1. Effect of Curcumin as Natural Inhibitor

The main protein of SARS-CoV-2, 3CLpro prevents the virus inoculation on the host.

By their molecular docking effect, the natural metabolites inhibit the 3CLpro of SARS-CoV-2, uplifting the prominent results of curcumin and other important flavonoids.[4]

The above natural chemicals are inhibitors of the 3 CLpro COV-2.

Medicated Gargle: Medicated *Haridradi* powder (containing fine turmeric powder and black salt) decoction can be used for gargling and mouth rinsing. Medicated oral gargling reduces viral load in salivary glands, oral cavity, and upper respiratory tract. This oral gargling is called as *kavala* (oral rinse) and *gandusha* (gargle).[5]

Bacterial and viral URTI are usually controlled by simple gargling.[6] It is a unique therapy to flush out the viruses. It damages the lipid envelope of the coronavirus from salivary glands and upper respiratory tract.[7]

Throat and salivary glands are the sites of viral replication and the main source of transmission of SARS-COV-2 too. SARS-CoV-2 has an envelope and outer membrane with a lipid layer. It is usually derived from the host cells. It is also highly sensitive to agents that disrupt lipid bio-membranes. Thus throat and salivary glands are said to be the major sites of virus replication and transmission during early coronavirus disease 2019, thereby advocating the application of oral antimicrobials.[8]

Steam Therapy: Medicated herbal antimicrobial containing steam inhalation helps in the reduction of viral load in the upper and lower respiratory tract. Steam inhalation is being used since hundreds of years for several respiratory conditions like common cold, wheezing, asthma, and bronchitis.[9]

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The reason behind the usage of steam was to reduce the replication of human rhinovirus which is a common microorganism that causes common cold in vitro at the temperature of 33 to 43 ºC.10

In the case of an inflamed upper respiratory tract with cough, cold, and sore throat, steam inhalation smoothens the inflamed mucous of the upper respiratory surface, reduces the viscosity of the phlegm and mucus, and makes airflow easy.[11]

The helpful effects of the practice of bending over a bowl of boiling water on Corona infections in the Philippines got the attention of doctors.[12]

Steam generated from a pressure cooker and boiling water has a temperature of about 70 ºC to 80 ºC and this is sufficient to destroy SARS-CoV-2. The influenza virus in humans and guinea pigs showed a similar pattern with many getting inactivated above the temperature of 30 ºC.[13] In another study, the SARS-CoV-2 at the temperature of 70 ºC incubation made inactive from 14 days to 5 minute.[14]

Nebulisation: This is done with 3% NS and herbal antimicrobial containing nebulising solution. Mist nebulisation therapy is used in hospitals and many developed countries because of its uniformity and safety of delivery.[15]

Early reduction of complications, high oxygen dependence, and ventilator dependence may be reduced by 3% by using normal saline mixed with filtered herbal anti-microbial liquid. There is less chance of secondary bacterial growth because of a decline in the inflammation within the airways. Mucociliary performance gets better which helps in the elimination of intracellular debris.

3% NS nebulisation is an effective and safe therapy for viral infections and secondary acute bronchiolitis.[16]

Results

22 primary contacts, 3 HRCT atypical viral pneumonia with severity score from 8 to 16, 3 COVID-19 RT-PCR positive patients, 2 RT-PCR positive with HRCT score more than 20 had visited Amrutha Sanjeevini Clinic, Shimoga, Karnataka between 20.04.2021 and 18.05.2021. All these individuals were subjected to gargling + steam inhalation, medicated steam inhalation, gargling + steam inhalation + nebulisation therapy respectively as mentioned above. A marked improvement was seen in all these 30 cases within a short span of time. One among these patients, who had severe pneumonia, was being managed in a local hospital. His condition was gradually improving with less oxygen dependency.

Discussion

COVID-19 is a highly contagious illness that is transmitted from one person to another through contaminated respiratory and salivary droplets.

SARS-CoV-2, which causes COVID-19 disease, was found in Wuhan, Hubei Province, China in December 2019.[17] The transmission of the virus occurs through the upper respiratory tract including the nose, nasopharynx, buccal cavity, salivary glands, pharynx, and larynx with more quantity of viral shedding.[17]

Conclusion

Gargling with herbal antimicrobial decoction, salt, and 3% NS, steam inhalation and nebulisation are economical, effective, and simple therapies in the prevention and management of early SARS-COV-2 disease. This unique protocol contains 4000-year-old time tested Ayurvedic medicine and procedures blended with modern scientific technique, to destroy the virus in the salivary glands, and upper and lower respiratory tract. This helps in the reduction of viral load, decreases the alveolar complications, and clears the airway with inflammatory debris maintaining normal oxygen levels in the blood. Adopting this protocol in prevention, high-risk groups, asymptomatic cases, and mild to moderate cases shall dramatically reduce the complications, oxygen dependency, and deaths in SARS-COV-2 disease. Mandatory HSP gargle and HSP steam inhalation must be adopted for the prevention of SARS-COV-2 disease. Radiological atypical pneumonia patients must be started with HSP nebulisation at the earliest to prevent complications and to minimise hospitalisation.

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Conflict of Interest: None

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