

COMBATING CORONA VIRUS DISEASE 2019 (COVID-19) THROUGH SIDDHA SYSTEM OF MEDICINE

Gnanavel I S^{1,2*}, Ramesh kumar R¹, Balasubramanian P L¹

¹ Dept. of Siddha Medicine, Tamil University, Thanjavur.

² Sivaraj Siddha Medical College, Salem.

Abstract

Corona Virus disease 2019 (COVID-19) caused by a previously unknown pathogen named severe acute respiratory syndrome-related Corona virus-2 (SARS-CoV-2) has now become a pandemic threat to the whole world. However, till now there are no vaccines or specific treatment against the new virus. India has various traditional systems of medicines. One of the most popular among them is Siddha Medicine. Siddha medicines are made from different kinds of polyherbal formulations which are used for curing many diseases. Siddha Medicines become popular nowadays because of various outbreaks from many communicable and infectious diseases like Chikungunya, dengue, swine flu etc. Siddha preparation has been classified into different categories of medicinal forms as 32 internal and 32 external and kudineer, chooranam and parpam are among the internal medicines. Siddha medicine classifies diseases and disorders into 4448 types and has remedy for more than 64 types of fever. Among these Kabasura Kudineer and Naga parpam with anupaanam (adjuvant) of Nelli Samoolam (*Emblica officinalis*) juice (act as a Zinc ionophore) are two Siddha formulations used against fevers due to respiratory infections. In this present study we have collected both traditional literature and modern scientific evidences for Kabasura Kudineer and Naga parpam for prophylaxis for Corona virus disease 2019 (COVID-19).

Key words: COVID-19, Kabasura kudineer, Naga parpam, Nelli samoolam

Introduction

World Health Organization - Perception

on Corona virus

Corona virus disease (COVID-19) is an infectious disease caused by a newly

discovered corona virus. The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes, so it is important to practice respiratory etiquette for

*Corresponding author:

Gnanavel. S. Ph.D Scholar, Dept. of Siddha Medicine, Tamil University, Thanjavur.

E-mail: drgnanavelmd@gmail.com

example, by coughing into a flexed elbow. Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring any special treatment. Older people and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness. Various measures to prevent and slow down the transmission of COVID-19 virus, were carried out by each country. Protect yourself and others from infection by washing your hands or using an alcohol based rub frequently and not touching your face. At this time, there are no specific vaccines or treatments for COVID-19. However, there are many ongoing clinical trials evaluating potential treatments. WHO is continuously updating the information as soon as clinical findings become available.

Clinical Features of Corona Virus Disease

People may be sick with the virus for 1 to 14 days before developing symptoms. The most common symptoms of corona virus disease (COVID-19) are fever, tiredness and dry cough. Most people (about 80%) recover from the disease without any special treatment.

Testing of Corona Virus

According to “Laboratory testing strategy recommendations for COVID-19” published by WHO, the diagnosis of Corona

virus is classified under following four considerations based on the disease spread,

1. Considerations for countries that have not yet reported cases (no cases transmission scenario)
2. Considerations for countries dealing with sporadic cases
3. Considerations for countries dealing with clusters of cases
4. Considerations for countries dealing with community transmission

Treatment of Corona virus

There is no specific treatment for Corona virus. Vaccine is under investigation and not available. Symptomatic treatment is recommended. The line of management includes Rest, Intravenous fluids, anti-pyretic, anti-inflammatory, analgesic agents. Chloroquine Phosphate (250 mg) once daily has been tried in the patients with fever which has demonstrated promising results.

Prevention and Control of Corona virus

As per the WHO recommendation, to prevent infection and to slow transmission of COVID-19, the following should be done:

- Wash your hands regularly with soap and water, or clean them with alcohol-based hand rub.
- Maintain at least 1 meter distance between from one person to another
- Cover your mouth and nose when coughing or sneezing.

- Stay home if you feel unwell.
- Refrain from smoking and other activities that weaken the lungs.
- Practice physical distancing by avoiding unnecessary travel and staying away from large group of people.

I. Siddha Medicine

Siddha Medicine is one among the indigenous medical systems of India. *Vatha*, *Pitha* and *Kapha* are said to be the functional units of the human body. “Disharmony in these functional units is the cause of diseases and therefore reestablishment of harmony is the cure” which is the proverb of our ancient system of Siddha Medicine.

II. Concept of Corona virus in Siddha

According to Siddha literatures, Suram is a clinical entity described by Siddhars and it has clinical features such as increased temperature, headache, loss of appetite etc. Also from Siddha literatures such as Theran Karisal^[1], Surava gadam^[2], Yugi Chinthamani^[3], etc., it is evident that Kapha suram and asathiyamana vidasuram are among the types of suram and these are the diseases associated with respiratory tract infections which include Fever, Cough, Dyspnea and Wheezing as predominant symptoms mentioned by various Siddhars. These predominant symptoms of Kaphasuram and vidasuram as given in Siddha text can be equated to symptoms of

corona (COVID-19) and thus the line of treatment for “Kaphasuram” and “vidasuram” in Siddha text can be suggested for corona (COVID-19).

III. Suggestive Line of Treatment

It is essential to know the disease, etiology, nature of the patient and severity of the illness. The etiology of corona (COVID-19) is under investigation, the known symptom for COVID-19 is cough and fever. The replication of corona virus is most challenging to curtail it from the human body.

Kabasura Kudineer

Kabasura kudineer chooranam is a classical Siddha formulation consisting of fifteen ingredients which are given below.

- 1) Chukku (*Zingiber officinale* Rosc)
Rhizome - 1 part
- 2) Milagu (*Piper longum* L). Fruit - 1 part
- 3) Ilavangam (*Syzygium aromaticum* (L.) Merr&L.M. Perry) Flower bud -1part
- 4) Sirukanchoriver (*Tragia involucrata* L).
Root - 1 part
- 5) Akkarakaram (*Anacyclus pyrethrum* (L.)Lag). Root -1 part
- 6) Mulliver (*Hygrophilaauriculata* (Schum.)Heine) Root -1 part
- 7) Kadukkaithol (*Terminalia chebula* Retz).
Pericarp - 1 part
- 8) Adhatodaiilai (*Justici aadhatoda* L). Leaf
- 1 part
- 9) Karpuravalliilai (*Plectranthus amboinicus*

- (*Lour*) Spreng) Leaf -1 part
- 10) Koshtam (*Saussurea costus* (*Falc.*) *Lipsch*). Root - 1 part
- 11) Seenthil (*Tinospora sinensis* (*Lour*) *Merr*). Stem - 1 part
- 12) Ciruthekku (*Premna herbacea* *Roxb. Offi*)- Root - 1 part
- 13) Nilavembusamulam (*Andrographis paniculata* (*Burm.f.*) *Nees*) Whole plant - 1 part
- 14) Vattathiruppiver (*Cissam pelospaireira* *L.*) Root - 1 part
- 15) Koraikkizhangu (*Cyperus rotundus* *L.*) Rhizome - 1 part

Naga (Zinc) Parpam

Nagam (zinc) is put in an iron vessel and kept over fire. When it melts one measure of karisalai (*Eclipta prostrata*) juice is poured drop by drop till nagam (zinc) becomes powder. Instead of karisalai, garlic juice can also be used. This powder is grinded with Aloe vera juice and made into small discs, dried and subjected to *pudam* process. The process is repeated till the green colour is changed.

Dose: 500 mg with nelli Samoolam (*Emblica officinalis*) juice (act as a Zinc ionophore)

Indication: Vida surapini, Respiratory diseases^[4].

Review of Literature

1) **Corona virus Spike (S) Glycoprotein (2019-Ncov) Targeted Siddha Medicines Kabasura Kudineer and Thonthasura**

Journal of Siddha: Vol 4 Issue 1

Kudineer – In silico Evidence as Corona Viral Drug^[5]

COVID-19 is the prime threat to the human race now. Currently the world faces Covid-19 out-break across all continents and it is characterized by its membrane proteins due to mutations. Siddha Medicine is one of the oldest medical systems in the World which is believed to be originated more than 10,000 years ago which is prevalent in the ancient Tamil land. Siddha medicine classifies diseases and disorders into 4448 types and has remedy for more than 64 types of fever. Among these Kabasura Kudineer and Thonthasura Kudineer are two Siddha formulations used against fevers due to respiratory infections. The present study was carried out to evaluate these two formulations against COVID 19 using in silico docking methods. For that the active principles/phytocompounds from the ingredients of the formulations were docked against corona virus spike glycoprotein trimmer (PDB ID: 3JCL) using iGEMDOCK software. 10 phyto compounds showed promising activity against COVID spike glycoprotein. This study showed that 10 phyto compounds which act as ligands to bind with viral proteins to prevent the binding of host receptors. Of these Cucurbitacin B (-112.09), Cardiofoliolide (-111.5), Apigenin (-98.84) and Pyrethrin (-92.98) were observed as more effective with less bind energies required for binding with

spike proteins to prevent the fusion lead viral replication. Since Kabasura kudineer contains more active phyto constituents, the higher activity was observed than Thonthasura Kudineer. The study demonstrated that Kabasura Kudineer could be a potential Siddha medicine for COVID 19 provided further preclinical and clinical confirmatory studies.

2) Analysis of Kabasura kudineer Chooranam - A Siddha Formulation^[6]:

There is a need in both empirical and scientific relationship which signifies the time testing and Standardization. In this paper an attempt was made to evaluate official Siddha formulation mentioned in Siddha formulary, Kabasura kudineer chooranam by analytical methods and chromatographic studies. It is a compound formulation consisting of fifteen ingredients. It is commonly used for the treatment of fever with or without respiratory infection. It is prescribed in large during the epidemic of Swine flu as a prophylactic and Media reports gave a Renaissance to this official Siddha formulation. Kabasura kudineer chooranam was purchased from SKM Siddha and Ayurveda Company (India) Ltd., Erode, Tamil Nadu, India. The chooranam was subjected to physico-chemical analysis, preliminary phytochemical analysis, TLC and HPTLC studies. This information will be used for laying down the pharmacopoeia standards of Kabasura kudineer chooranam.

3) Physicochemical Characterization and Instrumental Analysis of the Siddha Mineral Drug Naga Parpam^[7]:

The aim of the present study was to standardize the physico-chemical traits of the Naga Parpam, a Siddha traditional drug for treating oligospermia so as to attain maximum benefit to the mankind. The organoleptic characters, physico-chemical characters like ash values, pH value, specific gravity, solubility were analyzed. The total ash value was found to be 27.2%w/w, acid insoluble ash value is 11.6%w/w and loss of drying at 105 °c is 0.29 % w/w. The pH value is 9.6. The SEM analysis of the sample showed the presence of Nano and the quantitative analysis of the sample through EDAX revealed the content of Zinc, Carbon, Oxygen, Potassium, Iron, Chloride, Potassium and Calcium. The FT-IR spectroscopy applied in the mid infra-red region 4000 cm⁻¹ to 400 cm⁻¹ revealed the presence of functional groups like primary aliphatic amines, alcohols, alkynes, esters, carboxylic acids. The XRF of Naga Parpam revealed the elements like zinc, potassium, Sulphur in oxide form as well as in elemental form. This study highlights the suitable application of modern standardizing techniques for bringing the herbal formulation into focus.

4) Role of Zinc in Antiviral Immunity^[8]:

Zinc is an essential trace element that is crucial for growth, development, and the maintenance of immune function. Its influence reaches all organs and cell types, representing an integral component of approximately 10% of the human proteome and encompassing hundreds of key enzymes and transcription factors. Zinc deficiency is strikingly common, affecting up to a quarter of the population in developing countries, but also affecting distinct populations in the developed world as a result of lifestyle, age, and disease-mediated factors. Consequently, zinc status is a critical factor that can influence antiviral immunity, particularly as zinc-deficient populations are often most at risk of acquiring viral infections such as HIV or hepatitis C virus. This review summarizes current basic Science and clinical evidence examining zinc as a direct antiviral, as well as a stimulant of antiviral immunity. An abundance of evidence has accumulated over the past 50 y to demonstrate the antiviral activity of zinc against a variety of viruses, and via numerous mechanisms. The therapeutic use of zinc for viral infections such as Herpes Simplex Virus and the common cold has stemmed from these findings; however, there remains much to be learnt regarding the antiviral mechanisms and clinical benefit of zinc supplementation as a preventive and therapeutic treatment for viral infections.

5) Zn^{2+} Inhibits Corona virus and Arterivirus RNA polymerase Activity *In Vitro* and Zinc Ionophores Block the Replication of These Viruses in Cell Culture^[9]:

Increasing the intracellular Zn^{2+} concentration with zinc-ionophores like pyrithione (PT) can efficiently impair the replication of a variety of RNA viruses, including poliovirus and influenza virus. For some viruses this effect has been attributed to interfere with viral polyprotein processing. In this study we demonstrate that the combination of Zn^{2+} and PT at low concentrations (2 μ M Zn^{2+} and 2 μ M PT) inhibits the replication of SARS-Corona virus (SARS-CoV) and equine arteritis virus (EAV) in cell culture. The RNA synthesis of these two distantly related nidoviruses is catalyzed by an RNA-dependent RNA polymerase (RdRp), which is the core enzyme of their multi protein replication and transcription complex (RTC). Using an activity assay for RTCs isolated from cells infected with SARS-CoV or EAV—thus eliminating the need for PT to transport Zn^{2+} across the plasma membrane—we show that Zn^{2+} efficiently inhibits the RNA-synthesizing activity of the RTCs of both viruses. Enzymatic studies using recombinant RdRps (SARS-CoV nsp12 and EAV nsp9) purified from *E. coli* subsequently revealed that Zn^{2+} directly inhibited the *in vitro* activity of both

nidovirus polymerases. More specifically, Zn^{2+} was found to block the initiation step of EAV RNA synthesis, whereas in the case of the SARS-CoVRdRp elongation was inhibited and template binding reduced. By chelating Zn^{2+} with MgEDTA, the inhibitory effect of the divalent cation could be reversed, which provides a novel experimental tool for *in vitro* studies of the molecular details of nidovirus replication and transcription.

Conclusion

Siddha treatment is not only for complete healing but also prevention and rejuvenation. For the treatment two kinds of actions are to be considered.

1. Zinc present in Naga parpam with Nelli Samoolum (*Emblica officinalis*) anupaanam

References

1. Thyagarajan R, Therayar Maha karisal, Dept. of Indian Medicine and Homeopathy, Chennai -106, 2009.
2. Kuppusamy Mudaliar K.N, Suram, Siddha Maruthuvam, Tamil Nadu Siddha Maruthuva variyam, 1987.
3. Ramachandhiran P. Yugi Vaithiya Sinthamani 800. 3rd Ed. Thamarai Noolagam; 2018. GunapadamThathuJeevam, Dr. R. Thyagarajan L.I.M,Pg: 171.
4. Pitchiah Kumar M., K. Meenakshi Sundaram, M. S. Ramasamy - Corona virus Spike (S) Glycoprotein (2019-Ncov) Targeted Siddha Medicines Kabasura Kudineer and Thonthasura Kudineer – In silico Evidence for Corona Viral Drug - Asian Journal of Pharmaceutical Research and Health Care, Vol 11(2), 1-9, 2019.
5. Anitha John, R. Sasikala E, Sathiyarajeswaran. Analysis of kabasura kudineerchooranam-A Siddha formulation. Inter. Ayur. Med. J. 2016; 3(9):2915-20.
6. R.Sahulhameed, V. Velpandian M. Pitchiah Kumar B. Sathya ,S. Balasubramanian, V. Banumathi. Physicochemical Characterization and Instrumental

act as a Zinc Ionophore a classical siddha preparation to Block viral replication by inhibiting the activity of Viral RNA-Dependent RNA Polymerase of COVID – 19

2. The active principles / phytocompounds from the ingredients of the formulations were docked against corona virus spike glycoprotein trimmer (PDB ID: 3JCL) using iGEMDOCK software. 10 phytocompounds showed promising activity against COVID spike glycoprotein and also increase the lysosomal pH to block the viral replication.

In order to overcome symptoms of COVID-19 and to arrest the replication of COVID-19, effective plausible measures are to be taken from the Siddha literature for the treatment of COVID-19.

- Analysis of the Siddha Mineral Drug Naga Parpam., *Int. J. Med. Pharm,Res.*, 2015, 3 (1) : 897 – 901.
7. Scott A Read, Stephanie Obeid, Chantelle Ahlenstiel, GoloAhlenstiel - The Role of Zinc in Antiviral Immunity, *Advances in Nutrition*, Volume 10, Issue 4, July 2019, Pages 696–710, <https://doi.org/10.1093/advances/nmz013>
 8. Aartjan J. W. Velthuis, Sjoerd H. E. van den Worm, Amy C. Sims, Ralph S. Baric, Eric J. Snijder, and Martijn J. van Hemert - Zn^{2+} Inhibits Corona virus and Arterivirus RNA Polymerase Activity In Vitro and Zinc Ionophores Block the Replication of These Viruses in Cell Culture. Published online plos.org, 2010 Nov 4. doi:10.1371/journal.ppat.1001176. www.ncbi.nlm.nih.gov/pmc/articles/PMC2973827.