



Synergistic Prophylaxis on COVID-19 by Nature Golden Heart (*Piper betle*) & Swarna Bhasma

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Authors' contributions

This work was carried out in collaboration among all authors. Author JKM designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors HS and SS managed the analyses of the study. Author SS managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Corona virus (COVID-19) is an enveloped RNA virus that is diversely initiated in humans and wildlife. An entirety of six species has been identified to cause disease in humans. Viral infections participate a vital role in human diseases and recent outbreaks is the influx globally in form of novel corona. The SS-RNA virus from the enveloped corona virus family caused SARS (Severe acute respiratory syndrome) which is life threatening viral infection. The spreading of infection is rapid in many countries of the world. As of March 26, 2020, there have been 462,684 confirmed cases globally, and 20,834 deaths have been registered. The World Health Organization (WHO) called COVID-19 a pandemic on March 11, 2020. In Ayurveda pandemics are called as Janapadodhvansa roga. Coronavirus is an example of the latter. Janapadodhvansa literally means "annihilation of society". Swarna Bhasma is an proficient dosage form in the Ayurvedic treatment. In the conventional system of medicine some molecules of Gold are skillful for executive of various disorders. Various Sanskrit texts describe the medicinal uses of the heart shaped betel leaves. Leaves of Piper betel rich sources of numerous phytochemicals and are used in traditional medicinal systems. Many investigation studies on *Piper betle* has reported its therapeutic properties like anti-malaria, antibacterial, antifungal, anti-diabetic, anti-platelet anti-allergic, oral hygiene and anti-asthmatic effect and wound healing. The present review based on previous outcome of various

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pharmacological activity of both herbal (*Piper betle*) and herbo-mineral (Swarna Bhasma) to illustrated the proposed mechanism of the combination of both may be used can be used as prophylaxis and therapeutic treatment for corona patient. Here we review the natural and traditional two drugs and the mechanisms whereby the virus infects cells. Based on this analysis we make conclusions about whether these drugs should be used while we wait for the results of clinical trials.

Keywords: COVID-19; *Piper betle*; Swarna Bhasma (SB); prevention measures; medicinal; pharmacological.

1. INTRODUCTION

A novel coronavirus (SARS-CoV) virus is the prime key epidemic of the new era in many different countries of the world. The repeated exterior and outbreaks of CoVs point toward a public health threat. This suggests the hazard of animal-to-human and human-to-human transmission[1]. Skin is the outer protective covering and largest organ of the human body. It is a first line defense from extraneous environmental particulate matter. Various skin ailments are common in all age from neonates to the elderly and produces harmful effect. The skin diseases can be classified in to nine common types: Rashes, Burns, Bacterial infection, Viral infection, Fungal infection, Parasitic infection, Pigmentation disorder, Tumors and cancers, Trauma and similar condition like wrinkles, rosacea spider veins and varicose veins. Numbers of skin problems have risen, mainly as a result of prolonged use of personal protective equipments and excessive personal hygiene. Contact dermatitis, itching, pressure injury, pressure urticaia and exacerbation of pre-existing skin diseases; including seborrheic dermatitis and acne are common in this pandemic time. Because Covid-19 with an epidermal barrier could enhance the viral entry through indirect contact, dermatology patients like chronic inflammatory diseases, psoriasis, atopic dermatitis, lupus, scleroderma and hidradenitis supprativa etc might be high risk for *Piper betle* possessed a wide range of dermatological effect such as anti-bacterial, anti-fungal, antiviral, anticancer, free radical scavenging, burns and wound healing, skin lighting and skin protective, anti-aging. Among the various drugs Gold held supreme stratum on virtue of its therapeutic activity. Swarna Bhasma is attributed with tonic/rejuvenating and anti-oxidant, analgesic, immunostimulant, adaptogenic and glycogen sparing activity.

2. SARS (SEVERE ACUTE RESPIRATORY SYNDROME)

Severe acute respiratory syndrome (SARS) which had begun the prior year in Asia and

secondary cases somewhere else within the world, the WHO stating this coronavirus identified by a variety of laboratories was the contributory agent for SARS. The virus was collectively named the SARS corona virus (SARS-CoV) [2].

3. MICROBIOLOGY

Corona virus is single stranded, spherical or pleomorphic roofed with club shaped glycoprotein. Corona viruses are four sub types such as α , β , γ , & δ corona virus. Each of sub type corona viruses has numerous serotypes [3].

4. TRANSMISSION

The COVID-19 virus spreads chiefly through droplets of saliva or discharge from the nose when an infected person coughs or sneezes, so it's significant that you also practice respiratory etiquette (for example, by coughing into a flexed elbow) [4].

4.1 The Concept of Pandemic Diseases in Ayurveda [5]

The Ayurveda's is based on the conception 'dinacharya' (daily regimes) and 'ritucharya' (dietary and lifestyle regimens). The effortlessness of Ayurveda focuses on uplifting and maintaining of immunity, healthy life and transformation. Outbreaks, epidemics, and pandemics of extremely communicable diseases have afflicted mankind since the creation of human history and were very well -known to the antique Ayurvedic scholars. In the *Charaka samhita* described what preventive measures should be taken for both epidemics and pandemics. Epidemics are defined as rapid, unexpected outbreaks of a disease within a fairly restricted area. Pandemics, in distinction, refer to a extremely widespread disease that affects an whole nation or the world. In Ayurveda epidemics = "Aupasargika roga" and pandemics = "Janapadodhvasa roga".

4.2 Modes of Transmission (Ayurvedic Concept)

Piper betel has God created sacred as evergreen and perennial plant, and have specified the shape of his own heart. *Piper betle* (Piperaceae) is well known 'Paan' locally [6]. It is widely used in decoction, in curative wounds, burns, impetigo, eczema, lymphangitis and juice is advantageous stomatic. Leaf has a good altitude of juice that heals pharyngitis, abdominal pain and swelling. Usually betle leaf cures urticaria and it recovers the thrashing of equilibrium between the three 'humours,' specifically, Vatha, Pitha and Kapha[7]. *Piper betle* containing chavibetol,

chavicol, hydroxychavicol, diosgenin, eugenol, allylpyrocatechol, methyl eugenol, triterpenes and β -sitosterol. Angiotensin converting enzyme (ACE) is a key part in the renin angiotensin aldosterone system (RAAS) which control blood pressure. Over expression of RAAS is related with vascular hypertension, ACE inhibition has turned into a noteworthy target for controlling COVID-19 symptoms. As ancient literature Swas Kasa Chintamani Rasa are previously used by our Ayurvedacharya. In this combination 1 part of purified swarna bhasma when potentiate with *Piper betle* leaves and glycyrrhiza glabra it gives prevention and promotion of positive health.

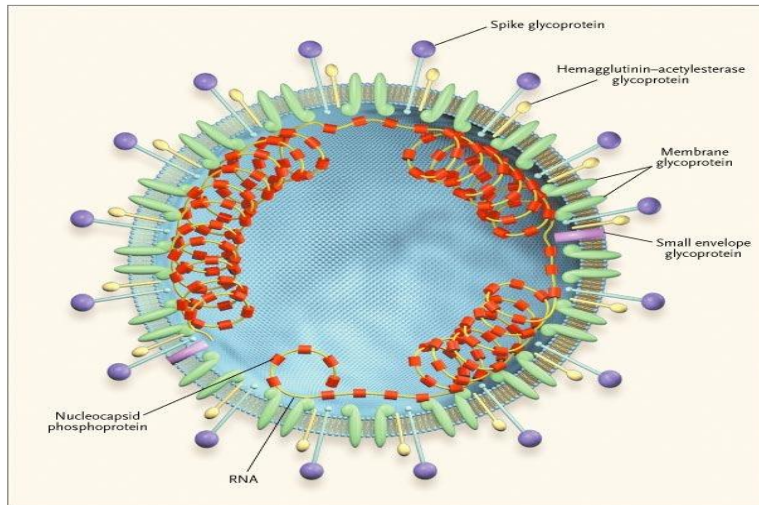


Fig. 1. Corona structure

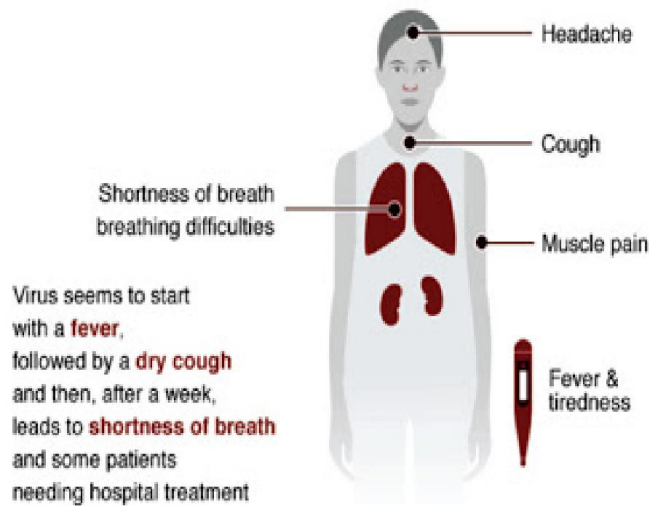



Fig. 2. Symptoms of COVID-19

Rasanagat = physically close interaction
 Gatra samsparshat = Physical contact with diseased individuals
 Nishwasa = via inhalation of infected respiratory droplets
 Sahabhajanat = sharing food
 Sahashayya = sleeping together
 Asana = sitting close together
 Vastra = sharing the same clothing
 Malya = via handkerchief and towels

Plant Profile [8]

Taxonomical classification	Vernacular name	Picture
Kingdom: Plantae Division: Magnoliophyta Class: Magnolipsida Order: Piperales Family: Piperaceae Genus: Piper Species: betle	Sanskrit: Tambool, Mukhbhushan, Varnalata Hindi: Paan English: Betle, Betle pepper, Betle-vine Telugu: Nagballi, Tamalapaku Tamil: Vetrilai	

Composition of SB[12]	Picture	Medicinal uses[13]
Swarnabhasma = 10 mg vacha ghana = 2 gm kushta ghana = 2 gm cow's ghee = 5 gm honey = 25 gm.		Dysentery & acidity, Jaundice & immune stimulant, Memory loss Heart diseases, Rheumatism & gout Respiratory diseases like bronchial asthma.

The *Piper betle* used as Antioxidant, CNS stimulant, Immunomodulator, antibacterial, antiulcer, cardiovascular, anti-infective [9]. Betle leaves are beneficial in pulmonary infection. The leaves with mustard oil warmed and applied to the chest to relive cough and complexity in breathing. Leaves are competent in procuring sore throat [10].

Since from the history, Ayurvedic text describes the used of gold as a medicine. As per Ayurveda "Swarna" = gold & "Bhasma" = ash. Gold consequential Ayurvedic medicine is called Swarna Bhasma (gold ash) [11].

Gold ash has been exploits as a therapeutic agent in the traditional Indian Ayurvedic medicine

for numerous clinical disorders including bronchial asthma, rheumatoid arthritis mellitus, CNS disorder and, diabetes. Swarna bhasma is habitually given orally mixed with honey, ghee or milk. Nanoparticles can be absorbed via sublingual route directly into the blood stream. Consequently, it can be supposed that particles of the swarna bhasma may get absorbed through the sublingual route directly into the blood stream [14].

5. SUMMARY

In Ayurvedic betel leaf extract is normally used as an adjuvant & mixed with different medicines perhaps for better effects nearby its autonomous

use as medicine. Previous investigations had been clearly proved that betel leaf is one of the mainly gifted commercial herbs with versatile therapeutic potential. The leaf has the enormous strength to act as natural antioxidant. The leaf showed the broad spectrum antimicrobial activity against a variety of bacterial strains. Adjacent to this, the leaves also prove antifungal and antiprotozoal activity against pathogen like typhoid, cholera, tuberculosis [21-22], etc. Chewing of betel leaf augment salivation which increase the content of peroxidase, lysozyme and antibodies to fight bacterial growth in the oral cavity. Thus it is the superlative choice for oral hygiene. The methanolic leaves extract decrease the antibody titre and increase the suppression of inflammation imply possible immunosuppressive effect on cellular and humoral response. The presence of phytochemicals like hydroxychavicol and chlorogenic acid, quercetin etc. acquires anti-mutagenic and anti-carcinogenic properties. Rasayanas as illustrated in Ayurveda nourish the

body, boost immunity and help to keep the body and mind in the best of its health.

The mechanism of action of Synergistic combinations involves the inhibition of redox enzymes such as thioredoxin reductase, induction of endoplasmic reticulum (ER) stress and subsequent activation of the unfolded protein response (UPR). Inhibition of these redox enzymes leads to cellular oxidative stress and intrinsic apoptosis.

In addition, Swarna Bhasma is an anti-inflammatory drug that reduces cytokines production and stimulates humoral immunity. The *dual inhibition* of inflammatory pathways and thiol redox enzymes by Swarna Bhasma makes it an attractive candidate for cancer therapy and treating microbial infections. Synergistic combinations demonstrate that inhibits replication of SARS-COV-2 in human cells at low micro molar concentration. It also demonstrates that synergistic combination treatment resulted in

Possible effect of *Piper betle* & Swarna bhasma against SARS-CoV

SARS-CoV Symptoms	<i>Piper betle</i> leaves	Swarna bhasma
Fevers, cough, bronchitis, Severe respiratory tract infections	Antimicrobial activity Aqueous extract of the fresh <i>P. betle</i> leaves showed efficient inhibitory action against the microorganisms [15].	Antimicrobial activity As per Ayurvedic literature it was describes that SB used for Yakshma (tuberculosis) Jwara (fever), Shwasa (dyspnoea), Kasa (cough), Krimi (worm infestation), Aruchi (anorexia), Visha (poisoning), bronchial asthma, rheumatoid arthritis [18]. With reference to SRRS-CoV the invitro cell line study showed that inhibition of Respiratory Syncytial Virus (RSV) in HEp-2 cell lines. This inhibition linked with distinct unregulated antiviral genes due to GNR mediated TLR, NOD-like receptor, and ROG-I like receptor cell signaling pathway [19].
Decreased immunity	Immunomodulatory activity Methanolic leaves extract <i>P. betle</i> reveals that it drastically suppressed hemagglutinin stimulated peripheral blood lymphocyte proliferation (dose-dependent manner) [16-17].	Immunomodulatory activity SB non-significantly influenced T-cell activity which in revolve increases vascular permeability, encourage vasodilatation, macrophage accumulation as well as their activation and which finally consequence that they promotes phagocytic activity. SB produces excellent humoral immune response. Thus, result provides experimental evidence that SB can be used to improve the immune function efficiently [20].

significant reduction in virus-induced inflammation. It also tested that combinations could be a useful drug to limit SARS-CoV-2 infection and associated lung injury. Further animal studies are warranted to evaluate the efficacy of synergistic combinations for the management of SARS-COV-2 associated disease.

6. FUTURE PERSPECTIVES

In modern era, multiple drug resistance has urbanized due to arbitrary use of existing antimicrobial drugs in the treatment of infectious diseases. The resultant showed the outbreak of worldwide COVID-19(novel corona) having an exponential growth rate of a 16% increase in cases per day is shown. Synergistic effect of herbs (*Piper betle* leaves) and herbo-mineral (SB) in combination taken regularly in dosage dependant manner can be used as prophylaxis and therapeutic treatment for corona patient.

7. CONCLUSION

Corona proved that nature can be brutal and highly lethal affecting human life globally, it may be the cause of this pandemic arises due to change of human lifestyle leading to weakness of the immune system, now the time has come to recall our ancient culture and rituals and also the use of our traditional medicine to bring changes to our society to that we can get ready for upcoming future outbreaks.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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