

Review Article

Swarna Bhasma: A Hypothetical Approach to Fight against Corona Virus

Himesh Soni^{1*}, Sarvesh Sharma¹, Jitender K Malik²¹D.H.S Bhopal, India²Bharat Institute of Pharmacy, Sonipat, Haryana, India***Corresponding Author**

Himesh Soni

Article History

Received: 18.01.2021

Accepted: 06.02.2021

Published: 14.02.2021

Abstract: Severe acute respiratory syndrome related coronavirus (sars-cov). So far again, we see the emergence of another outbreak due to a new strain called the sars-cov-2 virus. Sars-cov-2 is extremely contagious and has resulted in a speedy pandemic of covid-19. As the number of cases continues to rise, it is clear that these viruses pose a threat to public health. Swarna bhasma is an efficient dosage form in the ayurvedic treatment. In the conventional system of medicine some molecules of gold are skillful for management of various disorders. The renovation of metallic gold to medicinal gold is an ideal model of promising potentials of pharmaceutical branches of both systems of medicines. Therapeutically gold salts used for the decline in serum immunoglobulin levels and rheumatoid factor titers in rheumatoid arthritis. Gold inhibits stimulation of immunoglobulin-secreting cells. They can inhibit the activation of the classical and alternate complement pathways. Gold compounds reduce frequent cell-mediated immune responses to various mitogens and antigens.

Keywords: Covid-19, swarna bhasma (sb) & prevention measures.

INTRODUCTION

A new coronavirus (sars-cov) virus is the primary key epidemic of the new millennium in many diverse countries of the world. The repeated appearance and outbreaks of covs point toward a public health threat. This suggests the risk of animal-to-human and human-to-human transmission. The continuing changes in ecology and climate make future materialization of such infections more likely. The covid-19 is complicated 188 countries and territories around the world. As per report review there were 312002 total cases & 13071 deaths reported from corona virus [1]. The treatment of coronavirus-associated sars has been developing and consequently is no approval on an optimal regimen. The conventional therapeutic interventions for sars involve broad-spectrum antibiotics and sympathetic care, as well as antiviral agents and immune-modulation therapy [2]. Approximately 10 years after sars this time, another highly pathogenic cov, middle east respiratory syndrome coronavirus (mers-cov) has emerged in the middle east countries [3]. Coronaviruses (covs) are the chief group of viruses belonging to the order nidovirales, which includes coronaviridae, arteriviridae, and roniviridae families [4]. Coronavirus is a wrapper and single-stranded ribonucleic acid with to 9-12 nm-long surface spikes. Fewer symptoms include: fever, cough & shortness of breath [5-7].

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)

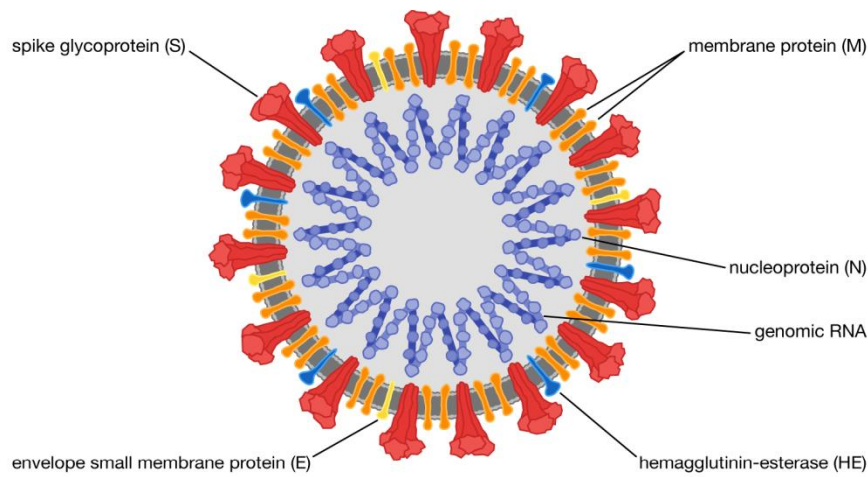
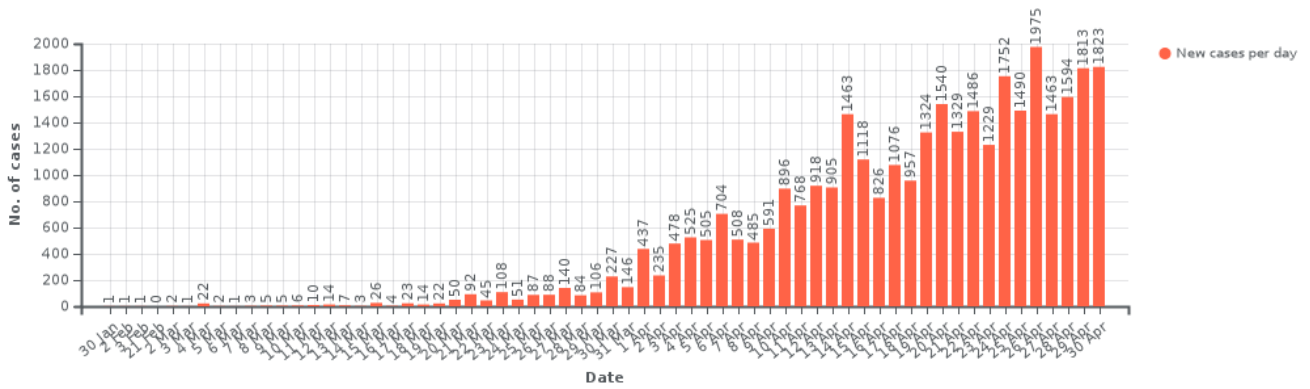
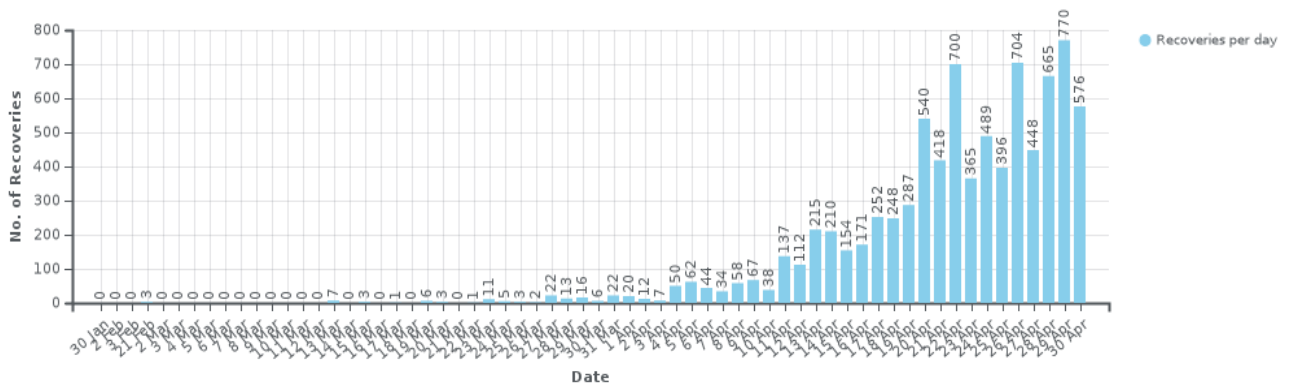


Fig.1: corona virus

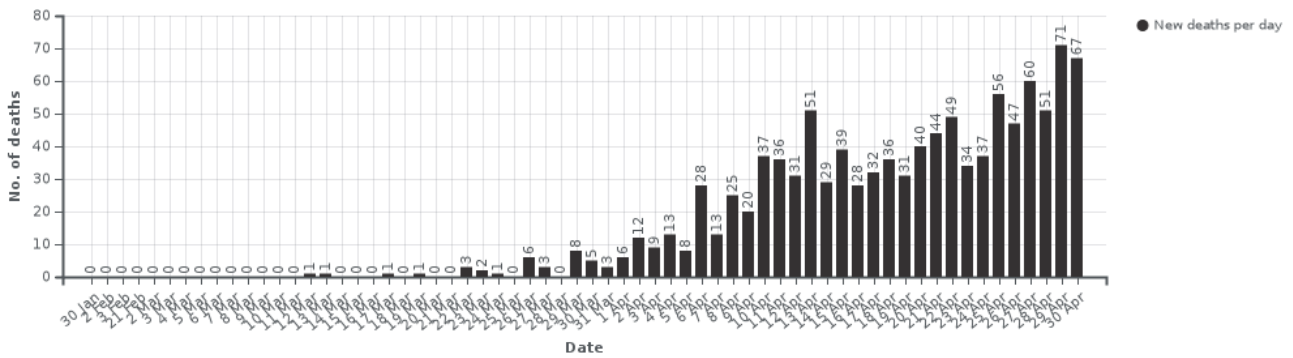
Outbreak of covid-19: Statistical Data Representation of Covid-19 as per corona meter.



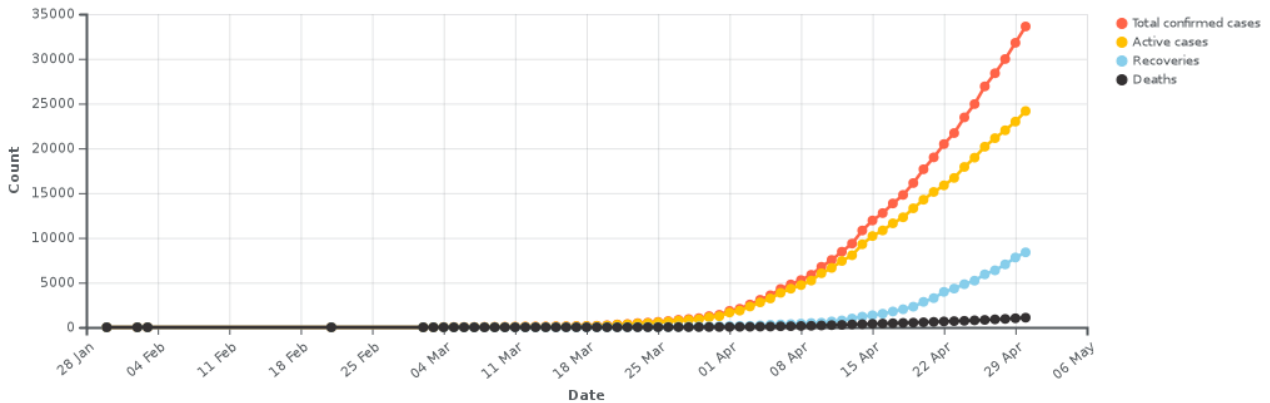
Graph-1: Date Wise Total Number of New Cases per Day Statistics.



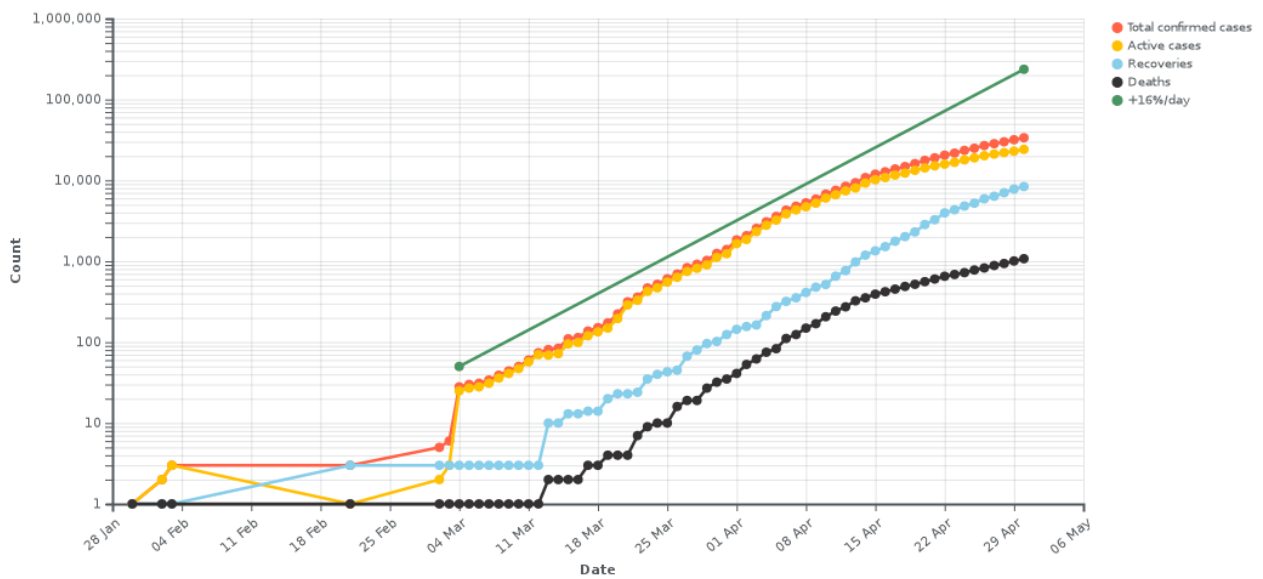
Graph-2: Date Wise Total Number of Recoveries per Day Statistics.



Graph-3: Date Wise Total Number of Death per Day Statistics.

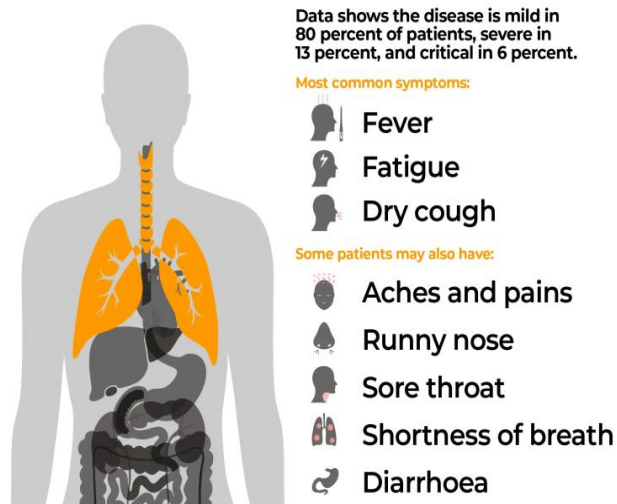


Graph-4: Compiled Statistics Of Confirmed Cases, Active Cases, Recoveries And Deaths.



Graph-5: Semi-Log Plot of the Spread of Sars-Cov-2 and Of Covid-19 Deaths in India.

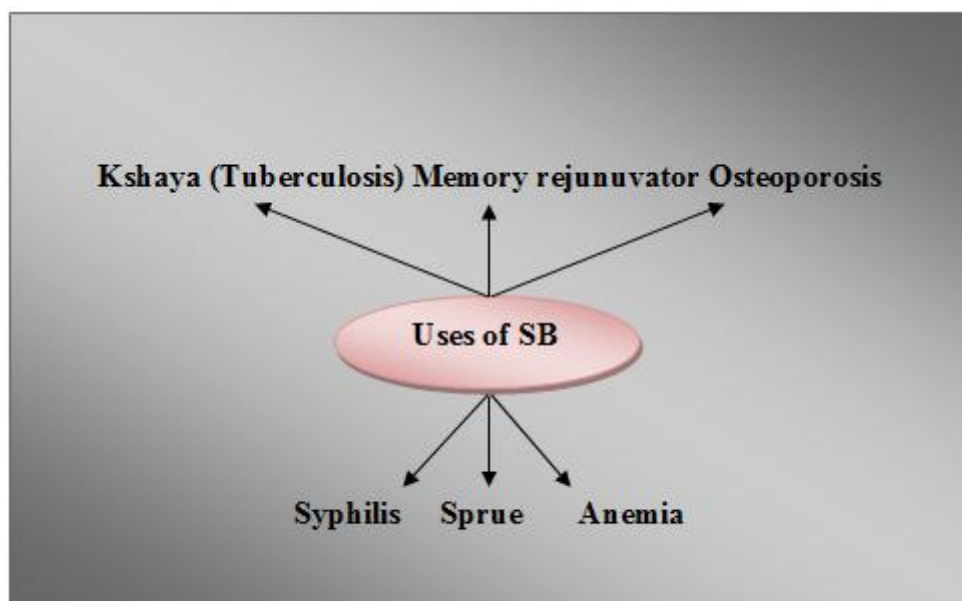
An exponential growth rate of a 16% increase in cases per day is shown Symptoms of sar-covid [8].



Since from the past era, gold is used as a medicine in ayurveda. “swarna” = gold & “bhasma” = ash. Gold resulting ayurvedic medicine is called swarna bhasma (gold ash) [9]. Swarna bhasma also known as incinerated gold is used in number of disorders as mentioned in ayurvedic text. Swarna bhasma augments longevity of life [10]. In the various texts of rasashastra (indian medicinal alchemy), its diverse procedures were highlighted. Bhasma preparation is distinctive operative procedure carried out for different metals and minerals. In this procedure, metals and minerals are rehabilitated to therapeutic agent after repeated incineration and grinding with herbals and specified materials. It is entirely mechanical process and its quality varies with its finished products particle size. The pharmaceutical method of preparation of swarna bhasma is based on the shodhana (purification) and marana (incineration) [11]. Swarna bhasma (sb) has much therapeutic relevance in both ancient and modern medicine. Sb is biocompatible, non-antigenic in character, free from toxicity, readily absorbed and assimilates in the body [13]. As per ayurvedic medicine, swarna has been used to improve the immunity, augment strength and endorse longevity [14].

Gold [15]	Swarna bhasma composition [16]
Chemical formula = au	Swarnabhasma = 10 mg
Atomic number = 79	Vacha ghana = 2 gm
Belongs to group = 11	Kushta ghana = 2 gm
Atomic. Mass = 196.96655.	Cow's ghee = 5 gm
	Honey = 25 gm.

Traditional uses of sb [17-18]



Medicinal value of sb [19]

Medicinal uses	Pharmacological potential
Dysentery & acidity	Free radical scavenging activity
Jaundice & immune-stimulant	Anti-cataleptic
Memory loss heart diseases	Anti-anxiety
Rheumatism, gout & leprosy	Analgesic potential
Diabetes mellitus & anti-aging	Restorative effect
Respiratory diseases like bronchial asthma	Augmentation of non- specific immunity

Some example of marketed bhasmas [20]

Bhasma	Ingredients	Dose	Uses
Swarna basant malti ras	Gold, piper-nigrum, white pear powder	62.5 mg b.d	Tonsillitis, fevers, cough, bronchitis, decreased immunity, cancers, auto-immune disorders.
Tsraailokya chintamani ras	Diamond, gold, silver, iron	62.5 mg b.d	Severe respiratory tract infections, bone marrow depression, ovarian cysts, uterine fibroids
Vasant kusumakar ra	Gold, silver, coral	62.5-125 mg b.d.	Complications of diabetes, neuropathy, general weakness.
Kumar kalian ras	Gold, iron, mica, copper pyrite, red sulfide of mercury	62.5-125 mg b.d.	General debility in children, fever, respiratory tract infections.

Proposed mechanism of action of gold compound against sars-cov

Immuno-stimulant	Severe acute respiratory syndrome
<ul style="list-style-type: none"> Gold binds to specific proteins in our immune cells and thereby interfere the production of inflammatory chemicals via alters their shape. This can punctual our immune system to distinguish the proteins as foreigners and our immune system triggering an allergic response [21]. Swarna bhasma have positive effect on both specific and non-specific immune responses. It shows stimulatory effect on peritoneal macrophages, that will helpful to combat against infection. Immune response- study documents that both specific and nonspecific immune responses were modified in a positive manner in swarnabhasma treated mice. Swarna bhasma showed a stimulatory effect on peritoneal macrophages, which may be helpful to fight against infections. It was estimated that macrophages achieved stimulation possibly due to presentation of the metal to cells in fine emulsified form. Gold compound increase in the serum igg level which helps immune system to fight against bacterial and viral infection [22]. 	<ul style="list-style-type: none"> The inhibition of respiratory syncytial virus (rsv) in (<i>in-vitro</i>) hep-2 cell lines as well as in balb/c mice by gold nanorods. This inhibition linked with distinct unregulated antiviral genes due to gnr mediated tlr, nod-like receptor, and rog-i like receptor cell signaling pathway. Tem section of lungs showed gnr present endocytic vesicles and histological results point-out infiltration by neutrophils, eosinophils, and monocytes correlates with clearance of rsv. Simultaneously the presence of cytokine and chemokines in lungs show mobilization of immune cells to counter rsv replication [22].

SUMMARY AND CONCLUSION

The principles and practice of rasayana in ayurveda is based on the principle of immunomodulation. Rasayanas as illustrated in ayurveda nourish the body, boost immunity and help to keep the body and mind in the best of its health. Immunomodulation is the sequential process of altering an immune response positively or negatively by the administration of a drug or compound. The potential uses of immunomodulators in clinical practice include the reconstitution or restoration of immune deficiency (e.g. In aids) and the suppression of normal or excessive immune function (e.g. In graft rejection or autoimmune disease). swarna bhasma acts via the modulation of humoral immunity it involves interaction of b-cell with the antigen, and their subsequent proliferation and differentiation into antibody-secreting plasma cells. Antibody functions as the effectors of the humoral response by binding to antigen and neutralizing it to form clusters that are more readily ingested by phagocytic cells. Previous literature revealed that histopathological studies show that antigen increased the cellularity in spleen and lymph node. An increase in cellularity in the white pulp in the spleen of swarna bhasma treated group may be due to the increase in lymphatic tissue and free lymphocytes in spleen. The increase in cellularity in the lymph node is indicative of increased immune activity. It may be due to the increased formation of cytokines from the cells involved in the immune mechanism. Swarna bhasma insignificantly influenced t-cell activity by increasing vascular permeability, vasodilatation, macrophage accumulation, and activation,

which finally result in the increased inflammation that promotes phagocytic activity. This behavior itself is suggestive of activation of the immune system at a cellular level with lymphocytes, cytokines, prostaglandin-e, etc. Are also liberating from the neighboring cells. In an experimental study, Bajaj *et al.*, evaluated the efficacy of swarna bhasma on non-specific immunity in mice [23]. The outcome of the finding showed significantly increased counts of peritoneal macrophages and also stimulated the phagocytic index of macrophages, validating its immunomodulatory effect. Toxicological studies reveal that standard preparations are safe for long time use. The inhibition of respiratory syncytial virus (rsv) by sb may be proposed mechanism for combat against corona virus. Modern researches on gold and gold compounds also support the swarnaprashana concept of ayurveda. Further experiment investigation needed to validated the action of sb against sars-cov.

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CITATION: Himesh Soni *et al* (2021). Swarna Bhasma: A Hypothetical Approach to Fight against Corona Virus. *South Asian Res J Pharm Sci*, 3(1): 6-11.