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The role of *Swarna Bhasma* in the treatment of Autoimmune disease

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ABSTRACT

According to Ayurveda point of view *Swarna Bhasma* is considered as the best medicine for various disease. *Swarna Bhasma* is frequently used in the treatment of autoimmune disorder. It is considered as best remedy in the treatment of rheumatoid arthritis, Ankylosing Spondylosis, SLE (Systemic lupus erythematosus), Multiple sclerosis, GBS (Guillen Barry Syndrome), Myasthenia gravis etc. The *Karma* of *Swarna Bhasma* is *Vrishya, Brimhana, Medhya, Hridya, Balya, Rasayan, Vajikarana, Smritiprada, Tridosaghana, Yogwahi, Chkshusya, Ojovridhhikara* etc. The indication of *Swarna Bhasma* is in *Prameha, Rajayakshama, Unmada, Jwara, Pandu, Swasa, Kasa, Aruchi, Agnimandya*, phthisis, loss of vitality, burning sensation, acidity, microbial infection, toxicity, infertility etc. It can be used in all diseases along with different adjuvants or other medium or herb to speed up the recovery process and to increase the body resistance diseases. *Swarna Bhasma* is potent antitoxin, immunomodulatory, nootropic, antirheumatic, antimicrobial and antiviral in addition. It is also a nervine tonic. *Swarna Bhasma* overall acts on all organs in the body, especially it acts on nerves, brain, lungs.

Key words: Gold, *Swarna Bhasma*, Marana, immunomodulator.

INTRODUCTION

Gold is a heavy metal with density of 17.5 kg/m.^[3] It is one among *Saptdhatu*, Sanskrit name *Suvarana* or *Swarna*, English name Gold, Latin name Aurum and symbol is Au. Its synonyms is *Suvarna, Swarna, Agnivarana, Manohara, Bhrngra, Jatarupan, Compeyaka*

Hiranya, Agnibijam, Jambava, Jambunadam, Kalyanka, Lahavara, Bhusanarha, Mangalya, Dravina, Kancana, Hema, Kanaka, Kuntham.

The properties of *Swarna Bhasma* is that's its *Rasa* is *Madhura, Tikta, Anurasa* is *Kashaya*, *Guna* is *Picchil, Snigdha, Virya* is *Sita, Vipaka* is *Madhura*. It is having *Vatapittahara* and *Kaphakara* activity.

The *Karma* of *Swarna Bhasma* is *Vrishya, Brimhana, Hridya, Balya, Rasayan, Vajikarana, Smritiprada, Tridosaghana, Yogwahi, Chkshusya, Ojovridhhikara* etc.

Therefore, *Swarna Bhasma* prevents geriatric problem and antidote for all poison.

Swarna Bhasma (also called monoatomic gold, *Swarna Bhasma* and *Suvarna Bhasma*) is an Ayurveda medicinal used for increasing non-specific immunity and in the treatment of a wide range of diseases. It

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also acts as an adjuvant for various medicines, herbs and boosts their action and increasing their efficacy. According to *Ayurveda* it is a good nervine tonic and improves overall health. It increases lifespan, intelligence, memory, skin glow and prevents several diseases. In addition, it increases strength and improves mental as well as physical performance.

Indication of Swarna Bhasma

The indication of *Swarna Bhasma Prameha*, *Rajyakshama*, *Unmada*, *Jwara*, *Pandu*, *Swasa*, *Kasa*, *Aruchi*, *Agnimandya*, burning sensation, acidity, microbial infections, toxicity, infertility phthisis, loss of vitality etc.

Contra-indication of Swarna Bhasma

Gold therapy is contraindicated in patients with renal diseases, hepatic dysfunction, hematological disorders, pregnancy, breast feeding etc. However, gold may be administered in the form of *Swarna Bhasma* in above conditions. According C. Dwarakanath Sen, *Swarna Bhasma* if well prepared, is nontoxic and does not injure the kidney (G.T.T.P43) as quoted in *Hiranyaloka*.

Pharmacotherapeutics of Swarna Bhasma

In general, *Swarna Bhasma* is along with other preparation by mixing well in mortar. The paste so prepared is composed mainly of metallic gold in a fine state of division. Such a treatment probably partly converts the insoluble powder into the colloidal state and it is possible that this colloidal gold is taken up by the system in minute quantities. It is also possible that metallic gold in this form is acted upon by various secretions in the gastrointestinal tract and may become converted into soluble compounds (Chopra et al. 1958).

Pharmacological actions

Swarna Bhasma is potent antitoxin, immunomodulatory, nootropic, antirheumatic, antimicrobial and antiviral in actions. It is also a nervine tonic. *Swarna Bhasma* overall acts on all organs in the body and improve the overall natural functions in the body, especially it acts on nerves, brain, lungs and mind.

Therapeutic efficacy of gold (*Swarna Bhasma*)

SN	Name of the book	Dose	Indications
1.	<i>Rasa Ratna Samucchya</i>	2 Ratti	<i>Kshya</i> , <i>Agnimandya</i> , <i>Swasa</i> , <i>Kasa</i> , <i>Aruchi</i> , <i>Sangrahni har</i> , <i>Oja</i> , <i>Dhatu Vivardhana</i> , <i>Balakar</i> , <i>Pandu Rogahar</i> , <i>Sarva Vishahar</i>
2.	<i>Rasa Prakash Sudhakar</i>	½ Ratti	<i>Saundarya Kanti Vardhana</i> , <i>TridoshajaRoga</i> , <i>Visha Nashaka</i> , prevent ageing on using 20 years.
3.	<i>Ayurveda Prakash</i>	1 Yava-8 Ratti	<i>Vrishya</i> , <i>Balya</i> , <i>Rasayana</i> , <i>Brihana</i> , <i>Netrya</i> , <i>Medha Smriti Pradam</i> , <i>Hridya</i> , <i>Ayusha</i> , <i>Kanti</i> , <i>Vagvishuddhi</i> , <i>Vishahar</i> , <i>Kshaya</i> , <i>Unmada</i> .
4.	<i>Rasa Tarangini</i>	1/8-1/4 Ratti	<i>Vrishya</i> , <i>Hridya</i> , <i>Netrya</i> , <i>Smriti Prada</i> , <i>Medhya</i> , <i>Rasayana</i> , <i>Punsavanopyogi</i> , <i>Vishahar</i> , <i>kantikar</i> , <i>Varnya</i> , <i>Visama Jwarahar</i> , <i>Antrashosha Kshayaghnam</i>
5.	<i>Rasamrit</i>	1/8-1/4 Ratti	<i>Vishaghna</i> , <i>Varnya</i> , <i>Medha Smriti Vardhana</i> , <i>Unmada Prasama</i> , <i>Sarva Doshah</i>

Indications are presented here as per Ayurvedic Terminology of different diseases which are very much similar to diseases of respiratory system, GIT, Immuno-enhancers of the conventional medical system.

Toxic effects

Improperly purified or improperly incinerated *Bhasma* destructs the *Bala*, *Virya* and leads to a number of pathologies which may ultimately terminate into fatal (RRS 5/9). The most common toxic effects that are associated with the therapeutic use of gold are those that involve the skin and the mucous membrane, usually of the mouth, occur in about 75% of all patients. Cutaneous reactions may vary in severity form simple erythematic to severe dermatitis. As with silver, a grey to blue pigmentation (*Chrysalis*) may occur in the skin and mucous membrane especially in

the area exposed to light. Kidney may be affected to some degree in 5-8% patient receiving gold. Thrombocytopenia was observed in about 1% of patients. Leucopenia, agranulocytosis and aplastic anemia is rare but often fatal. Eosinophilia is common; gold may cause a variety of severe toxic reactions including encephalitis, peripheral neuritis, pulmonary infiltrates and vasomotor crisis. Auranofin appear to be better tolerated than the injected gold compound and the incidence of severity of musculoskeletal and hematological side-effects are less. However, Auranofin in products a high incidence of gastrointestinal disturbances which are sometimes troublesome in lead to discontinuation of therapy by about 5% of patients.

Gold has to pass through many stages through many stages during the process of *Swarna Bhasma* preparation and each stage. So *Swarna Bhasma* may also contain other elements which may be seen in chemical composition of *Swarna Bhasma*.

Chemical composition of *Swarna Bhasma*

Gold metallic	96.76 %
Silica (SiO ₂)	1.140 %
Iron (Fe ₂ O ₃)	0.140 %
Lime (CaO)	0.546 %
Copper	Traces
Magnesium	Traces
Phosphates (P ₂ O ₅)	0.782 %
Potash (K ₂ O)	0.161 %
NaCl	0.078 %
Sulphates (SO ₃)	0.150 %
Moisture	0.244 %
Total	100.00 %

(R.N. Chopra 1958)

Ingredients and preparations

Swarna Bhasma is prepared from pure gold through a series of exhaustive classical ayurvedic techniques and calcinations processes with the other raw material and herbs. These processes are required to convert the gold into the therapeutic form (Metallic gold) and removing its bad effects on the body. *Swarna Bhasma* particle crystallize size is about 28 to 35 nanometers. *Swarna Bhasma* contains about 90 % pure gold particles.^[1]

Autoimmune diseases

Autoimmune diseases are a discovered in which the immune system produces auto-antibodies to an endogenous antigen, with the subsequent injury to the tissue of the body that display this antigen. Although the connective tissue like skin, muscles and joints are susceptible to wear and tear, some peoples have a tendency for these tissues to undergo degenerative changes that are initiated by inflammatory and immunological mechanism. Inflammation of the skin and the joints, such as systemic lupus erythematosus and rheumatoid arthritis, respectively are among the most familiar form of pro-inflammatory auto immune disorders, but other types of conditions have been found to have an autoimmune component including Hashimoto's thyroiditis, myasthenia gravis, diabetes mellitus and vitiligo.

The immune system is a network of organs, cells and molecules that work together to defend the body against attacks by foreign invaders such as germs, bacteria, viruses, parasites and fungi. The bodies' first line of defense is the skin and mucous membranes is the house of macrophages and antibodies. The macrophages job is to digest the antigens while the antibodies trap the antigens that got away. If the antigens break through these barriers, the body reacts by producing lymphocytes (B and T cells) programmed to attack and kill the antigen. In general terms, when antibodies are directed against the body's own cells or when B and T cells attack and destroy their own body's cells and not foreign antigens, an auto immune disorder can result. Organs and tissues frequently

affected include the thyroid, pancreas, adrenal glands as well as red blood cells and connective tissues.

In Ayurveda, *Ama* is the real cause of varieties of autoimmune disorders which is outcomes of faulty of various *Agnis*. In *Ayurvedic* medicines, treatable diseases arise from the presence of *Ama*, a toxic byproduct of poor digestion. One of the features of *Ama* is that once it enters the *Dhatu* cycles it impairs the nutrition and functions of the *Dhatus*. *Ama* has a particular affinity for the tissues that are weak and accumulates in these locations, the *Doshas* become vitiated, first *Kaphas*, with an increase in congestion, followed by *Pitta* which sets up a cycle of inflammation and then *Vata*, which is responsible for degenerative changes.

The formation of *Ama* at GIT level and its intensity and virulence depend upon the status of *Kayagni*, further its changes the integrity of GI mucosa and absorbs and goes into systemic circulations and localized to the system or organs or cells and induces disorders in due to course of time. The ancient concepts of *Ama*, *Amagenesis* and its role in the genesis of disease is quite similar to the Leaky gut syndrome of modern medicine which is responsible for variety of autoimmune disorders of unknown etiology.^[2]

Effects of Swarna Bhasma in different diseases^[3-4]

SN	Disease	Effect
1.	Skin disease (pemphigus vulgaris)	Interruption of the inflammatory cycle and inhibition of skin enzymes involved in blister formation. Inhibited prostaglandin synthesis, two epidermal enzymes, acid phosphatase and tryptophangyl t RNA synthetase, were also inhibited by gold
2.	Cancer	Gold particles or <i>Swarna Bhasma</i> is also helpful for cancer patients. It stops the growth of cancer cells and improves the immunity to fight off the unwanted growth of body tissues.
3.	B-chronic lymphocytic leukemia (BCLL)	The gold ApVF treated cells showed significant down regulations anti apoptotic proteins and exhibited PARP cleavage.

4.	Reproductive functions	<p>I. Histological study of ovary also showed Graffian follicle with ovum proving stimulation of reproductive function.</p> <p>II. Testicular steroidogenic and gametogenic function, gametogenic activity exhibited a significant increase in the number of step 7 spermatoids (7Sd) ($p < 0.001$) at stage 7 of seminiferous cycle when compared to control.</p>
5.	Rheumatoid arthritis	Gold salt appear to be slow acting neurotoxic drugs that significantly decrease the intrasynovial concentration of substance P, a well –known inflammatory neuropeptide, in arthritis patients.
6.	Immune response	Gold inhibits stimulations of immunoglobulin secreting cells. Gold inhibits the activation of the classical and alternate complement pathways. Gold compounds inhibits numerous cells and mediated immune responses to various mitogen and antigen. Inhibition may be due to the effect of gold on macrophages acting as helper cells in these reactions.
7.	Arthritis	<i>Swarna Bhasma</i> is useful in the treatment of rheumatoid arthritis. It works on ANA (antinuclear antibody), <i>Swarna Bhasma</i> destroys the production of ANA. It has <i>Vatanulomak</i> and <i>Amapachak</i> properties.
8.	Cardiac disorder	<i>Swarna Bhasma</i> is used in the treatment of heart diseases. It provides strength to the heart and heart muscles. It increases blood circulation to various parts of the heart, detoxifies the blood and cleanses the coronary arteries. It prevents the heart from myocardial ischemia (MI) by maintaining the optimum flow of blood to the heart muscles. Chest pain or Angina pectoris occurs due to any obstruction, atherosclerosis or spasm of coronary arteries of the heart. <i>Swarna Bhasma</i> along with <i>Shringa Bhasma</i> reduces the atherosclerosis of arteries, relaxes blood vessels and removes the obstructions.
9.	Blood purifier	The digestion system and other body system release many toxins. Some external

		factors also play a role for toxins accumulation in the body. Infections due to bacteria, viruses and other microorganisms release many toxins inside the body. Although we have to cure the infectious diseases, but some toxins remain in the body, which produces other unexplained diseases later on. For releasing out these toxins, gold ash is used in Ayurveda. Sometimes peoples suffer from diseases of unknown etiology. In these cases, Ayurveda treats them with <i>Swarna Bhasma</i> and other medicines according to the predominance of <i>Dosha (Vata, Pitta and Kapha)</i> . <i>Swarna Bhasma</i> purifier the blood and release toxins out of the body.
10.	Tuberculosis	<i>Swarna Bhasma</i> is a drug of choice in Ayurveda for tuberculosis (T.B.). It has anti microbial, antitoxins and antiviral effects in the body. it is beneficial in the initial stage of tuberculosis. It acts as a strong antibacterial agent and helps to destroy the tubercular bacilli responsible for causing the infection. It also reduces the symptoms caused by this condition such as fever, loss of muscle mass, weakness. It also improves the immunity of a person.
11.	Mental disorder	<i>Swarna Bhasma</i> is also beneficial Ayurvedic medicine for mental disorder. <i>Swarna Bhasma</i> also reduces the inflammation in the brain. Generally gold ash is helpful in symptoms such as unconsciousness, lack of attention, ignorance, irritability, feeling of unhappiness, isolating from others, inability to relax etc. <i>Swarna Bhasma</i> acts on neurotransmitters such as serotonin, dopamine and increase nerve activities.

DISCUSSION

Swarna Bhasma is an Ayurvedic medicine used for increasing non-specific immunity and in the treatment of a wide range of diseases. It is also acts as an adjuvant for various medicines and herbs and boost their actions and increases their efficacy. According to Ayurveda, it is a good nervine toxic and improves overall health. It increases lifespan intelligence, memory, skin glow and prevents several diseases. In addition, it increases strength, endurance and mental as well as physical performance.

Swarna Bhasma is having following medicinal properties – alterative, antitoxin, immunomodulatory, nootropic, nervine tonic, neuroprotective, cardioprotective, cardiac tonic, hepatoprotective, antioxidant, adaptogenic, antiparalytic, anti-rheumatic or anti-arthritic, anti-inflammatory, anti-anginal, antianxiety, antiarrhythmic, antibacterial, anticancer, antidepressant, anticonvulsant, antifungal, antimicrobial, anti-mutagenic, antiproliferative, antipsychotic (neuroleptic), anti-pyretic, antitussive, antiulcerogenic, aphrodisiac, demulcent, digestive stimulant, febrifuge, intellect promoting, anti-tubercular, antidote for poisoning and general tonic.

The uptake of gold nanoparticles occurred in the small intestine by absorption through single degrading enterocytes in the process of being extruded from a villus and gold nano particles typically less than 58 nanometer in size ultimately reaches blood. Therefore, compatibility with blood is an extremely important factor when these particles are observed into the blood stream. Blood compatible materials can be defined as those materials which do not damage blood components when they come in contact with blood.

Chemical composition of *Swarna Bhasma* is having Gold metallic, silica, iron, lime, copper, magnesia, phosphates, potash, NaCl, sulphate and moisture. All these are requiring in metabolism of our body. They fulfill requirements of minerals in our body and shows drastic improvements of patients.

CONCLUSION

Swarna Bhasma has been utilized as a therapeutic agent in Ayurvedic medicine for several clinical disorders including bronchial asthma, rheumatoid arthritis, diabetes mellitus and nervous system diseases. *Swarna Bhasma* improves muscles strength and helps in all diseases like muscular dystrophy. *Swarna Bhasma* helps to improve low appetite. *Swarna Bhasma* brings out quickly the color and beauty of the body. *Swarna Bhasma* is potent antitoxin immunomodulatory, nootropic, antirheumatic, antimicrobial and antiviral in actions. It is also a nervine tonic. In modern medicine gold

nanoparticles find significant application in drug delivery as they are capable of encapsulating active drugs and targeting. Colloidal gold nanoparticles represent a completely novel technology in the field of particle-based tumor targeted drug delivery. The monolayer of polyethylene glycol (PEG) over gold nanoparticles has been found to improve the cellular internalization properties.

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