



## ***World Journal of Pharmaceutical Science & Technology***

Journal homepage: [www.wjpst.com](http://www.wjpst.com)

### **Review Article**

## **SWARNA BHASMA- AN ANCIENT APPROACH TO IMPROVE IMMUNITY**

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Received: 14-09-2020, Revised: 29-09-2020, Accepted: 28-12-2020

### **ABSTRACT**

Swarna bhasama is one of the important formulations in Ayurveda which is used to increase longevity, strength, and combat various diseases in Ayurveda. From centuries Swarna Bhasma (incinerated gold) is used as a medicine in the Indian traditional system of medicine. It has been used as a pure metal, bhasama, and other dosage forms in the ancient system of medicines. Apart from that Swarana Bhasama has shown effect in various diseases like anemia, osteoporesis, and chronic disorder, etc. In the present review, an attempt was made to study the effect of Swarna bhasama in increasing immunity.

### **KEYWORDS**

Swarna, Swarna Bhasma, Immunomodulator, Immunostimulant.

## INTRODUCTION

Rasashastra is the mother of several potent and therapeutically active medicines. Swarna Bhasma (incinerated gold) is one of them. It is one of the most potent and popular medicine among all Ayurvedic Medicines. In Brihatrayi, numerous references were observed concerning the use of metals and minerals for different purposes including medicinal and nonmedicinal uses.<sup>1</sup>

In the present era, metallic and herbomineral preparations inhabit a significant place in the Indian system of medicine. It has been used to enhance strength and potency, promote long life, and combat the aging process in humans. The use of Swarna (gold) as a pure metal, bhasma, and other dosages forms for different therapeutic applications, in ancient as well as contemporary medicine has been reviewed periodically over the years.<sup>2</sup>

In the classical texts of Ayurveda, it has been mentioned as a rejuvenator, aphrodisiac, memory booster, etc. It is used in numerous disorders like Grahani (sprue), Pandu (anemia), Asthikshaya (osteoporosis), Jirna Vyadhi (chronic disorders), etc.<sup>3</sup> It is the chief ingredient in therapeutically potent medicines like Makaradhwaja, Swarna Malini Vasanata, Vasantakusumakara Rasa. It's few therapeutic properties like analgesic<sup>4</sup> anticataleptic, anti-anxiety and antidepressant<sup>5</sup>, antioxidant<sup>6</sup> and augmenting effect<sup>7</sup>.

Bhasma preparation is a distinctive operative procedure carried out for different metals and minerals. In this procedure, metals and minerals are converted to a therapeutic agent after repeated incineration and grinding with herbals and specified materials. The pharmaceutical procedure of preparation of Swarna Bhasma is based on the Shodhana (purification) and Marana (incineration) concept with relevant herbal media and equipment.<sup>8</sup> In the present study an extensive literature review was done to study the immunomodulatory effect of Swarna bhasma.

## SWARNA IN TRADITIONAL SYSTEM OF MEDICINE

Classical text of Ayurveda mentioned many disorders would be cured by Swarna Bhasma and increase the longevity of life<sup>9</sup>. Swarna has been used for various purposes in the form of pure metal, combined

formulations, or bhasma along with various anupana. In the traditional system of medicine (mainly Indian and Chinese), gold was used either as Swarna Bhasma, Swarna Parpati, Swarna Patra, or as a red colloidal solution. In Ayurvedic bhasmas, the gold is used in the form of purified metallic fine powder (probably as nano-particles) or red colloidal solution where both are prepared by elaborate treatments including using herbal extracts and even with other metals.<sup>10</sup> Several procedures of its preparation are mentioned in the classical texts of Rasashastra.

As per the Ayurvedic system of medicine it has been found that gold is used both externally and internally for therapeutic purposes. Externally Swarna dharana (the wearing of gold ornaments) is considered pious and mainly use in grahabadha. Internally it is either in the form of rubbed gold (Vidhrisya dhoute drishadi), incinerated gold, or Swarna Bhasma, Swarna Lavana (Described in Rasatarangini), or Swarna vark (Mostly used in Unani system of medicine)<sup>11</sup>. Therapeutic efficacy of Gold (Swarna bhasma) as described in Ayurvedic classics are mentioned in table no. 1

**Table 1: Therapeutic efficacy of Gold (Swarna bhasma) as described in Ayurvedic classics**

S.No.	Name of Book	Dose	Indications
1.	<b>Rasa rattan samucchaya</b>	2Ratti	Kshya, Agnimandya, Swasa, Kasa, Aruchi, Sangrahnihar, <b>Ojo dhatu vivardhana</b> , Balakar, Pandu Roga har, Sarva Visha har
2.	<b>Rasa prakash sudhakar</b>	½ Ratti	Saundarya Kanti vardhana, Tridoshaja Roga, Visha nashaka, <b>Prevents aging</b> on using 20 years
3.	<b>Ayurved Prakash</b>	1Yava- 8 Ratti	Vrishya, Balya, Rasayana, Brinhana, Netrya, Medha smriti pradam, Hrdya,

			Kanti, Vagvishuddhi, Vish har, Kshaya, Unmadhar, <b>Ayushya</b>
4.	<b>Rasa tarangini</b>	1/8- ¼ Ratti	Vrishya, Hrdya, Netrya, Smriti prada, Medhya Rasayana, Punsavanopypgi, Kantakar, Varnya, Visama Jwarahar, Antra Shosha Kshayaghnam, <b>Rasayana</b>
5.	<b>Rasamnt</b>	1/8- ¼ Ratti	Vishaghna, Varnya, Medha smriti vardhana, <b>Rasayana</b> , Medhya, Yakshma prasamana Sarva Doshaha

### IMMUNOMODULATORY EFFECT OF SWARANA AND SWARANA BHASAMA

The principles and practice of Rasayana in Ayurveda is based on the principle of immunomodulation. Rasayanas as described in Ayurveda nourish the body, boost immunity and help to keep the body and mind in the best of its health. It is a multi-angled approach, taking care of body, mind, and spirit thus affecting the total wellbeing of an individual.

It seems that the Rasayana act at three levels of the bio-system to promote nutrition, at the level of Agni by promoting digestion and metabolism, at the level of Srotas by promoting microcirculation & tissue perfusion, and at the level of Rasa itself by acting as a direct nutrient.

Thus the Rasayana remedies act essentially on nutrition dynamics and rejuvenate both the body. In this way, Rasayanas modulate immunity by its pharmacological & neutraceutical action and therefore, help in the management of a wide range of disorders<sup>13</sup>.

Traditional gold preparations are attributed to rejuvenating and antioxidant properties. It is considered the best Rejuvenator, promotes longevity, and prevents aging<sup>14</sup>. In an experimental study, Bajaj et al (2001)

evaluated the efficacy of Swarna Bhasma on nonspecific immunity in mice. Male mice were administered with the incremental doses of Swarna Bhasma orally for 10 days. It was observed that, it significantly ( $p < 0.001$ ) increased counts of peritoneal macrophages and also stimulated the phagocytic index of macrophages, validating its immunomodulatory effect<sup>15</sup>.

Swarna bhasama acts on both specific and nonspecific immune responses were modified in a positive manner in Swarna bhasma 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. The increase in the serum IgG level in the Gold compound group shows the immunological response of the rats against the antigenic material.

Gold salts used therapeutically can be followed by a decline in serum immunoglobulin levels, and rheumatoid factor titers in rheumatoid arthritis; in pemphigus there is similarly a drop in anti-epithelial antibody titers. Gold inhibits the stimulation of immunoglobulin-secreting cells. Gold compounds inhibit numerous cell-mediated immune responses to various mitogens and antigens. Inhibition may be due to the effect of gold on macrophages acting as helper cells in these reactions.

Gold has also been reported to enhance certain immune reactions. The extent of the immunoregulatory effects of gold in vivo is unknown, and the relation of these effects to its therapeutic actions remains to be clarified.<sup>16</sup>

In one such research to study the effect of gold on immune response, separate concurrent injection of organic gold compounds and antigen into mice resulted in immunoenhancement that could be measured by direct and indirect plaque-forming cells, rosette-forming cells, and serum antibody assays.<sup>17</sup>

**Table 2: Studies conducted on Swarna bhasma to evaluate the immune response of Rasa dravya.**

Swarna forms	Pharmacology activity	Results

Swarna bhasma	Immunomodulatory effect <sup>14</sup>	Non Specific Immunity Increased counts of peritoneal macrophages and also stimulated the phagocytic index of macrophages, validating its immunomodulatory effect. Traditional preparations of gold exhibited immunostimulant activity on the macrophage.
Swarna bhasma	Free Radical Scavenging Activity <sup>18</sup>	In an experimental animal model, chronic Swarnabhasma-treated animals showed significantly increased superoxide dismutase and catalase activity, two enzymes that reduce free radical concentrations in the body. Swarna Bhasma enhanced activity of SOD (Superoxide dismutase) and catalase (80% compared hemolysate) which can be correlated with the improved pathophysiological conditions of the patients.
Swarna	Immunoenhancement effect <sup>19,20</sup>	To study the effect of gold on immune response, separate concurrent injection of organic gold compounds and antigen into mice resulted in immunoenhancement that could be measured by direct and indirect plaque-forming cells, rosette-forming cells, and serum antibody assays.

## CONCLUSION

Due to the present lifestyle, stress, and unhealthy nutrition, etc. immunomodulation should be of great importance in the medical field to combat several ineffective, chronic, autoimmune & inflammatory diseases. As per the literature, it can be concluded that gold and its preparations are having significant therapeutic potential in many diseases and pathological conditions and also possess immunomodulatory effect.

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