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## Role of Swarna Prashana as an immunity booster in Covid-19 and other viral infection

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**Abstract:**

Swarna Prashana (the administration of gold orally as an electuary) is a novel Ayurvedic treatment for children. Gold should be triturated with water, honey, and Ghrita, according to Acharyas. Acharya Kashyapa clearly explained the administration of Swarna (gold) to improve intellect, digestion and metabolism, physical strength, immunity, complexion, fertility, and life span. Because of its Rasayana properties, gold is recommended for internal use even before conception in order to have a healthy baby. It is used in Pumsavana Karma after conception (proper intra uterine growth and development of the fetus). Gold is said to play an important role after birth in Lehana (supplementary feeds) and Jatakarma Samskara. Ayurveda defines "vyadhikshamatwam" (immunomodulation) as an individual's resistance to any infectious disease, which includes both attenuation against manifested disease and resistance to the offspring of the next generation. It is an ancient immunization technique that has no negative side effects and promotes a healthy life in terms of physical, mental, and social health.

**Key-words-** Swarna-prashana, Therapeutic benefits, , immuno-modulator, Lehana

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**Introduction:**

The entire world has been affected by Pandemic COVID 19, with a higher mortality rate. The World Health Organization declared COVID 19 a pandemic. This has taught us that the only thing we can do is maintain health hygiene and social distance. As a result, prevention is the best way to combat such pandemics, and immunity is crucial in the fight. As a result, it is critical to develop a safe and effective treatment approach in alternative science, such as Ayurveda, for the prevention and treatment of this type of infection. If the immune system is weakened for an extended period of time, it becomes more susceptible to various infections, particularly those related to the respiratory system, herpes, and fungal infections.<sup>1-4</sup> Vyadhi refers to disease, and Kshamatva refers to the body's inherent capacity. As a result, the Ayurvedic concept of Vyadhikshamatva is equivalent to immunity. Vyadhikshamatva is primarily determined by the Bala of the body, i.e. Sharirabala. Bala comes in three varieties. Sahaj Bala (Constitutional), Kalaj Bala (Temporal Strength), and Yuktikrita Bala are the three (Acquired strength). Similarly, Acharya explained the concept of Ojus, which is essential in the body's defense mechanism. Immunity can be gained through the use of various herbal and mineral drugs, Rasayana therapy, dietary changes, exercise, and proper hygiene, among other things.<sup>5</sup> Rasayana therapy has been discovered to be one of the most effective treatments for boosting immunity. Naimittika Rasayana is used to treat diseases through the use of specific formulations. Rasayana Chikitsa's

curative effect is undeniable. Rasayana strengthens the body and sense organs, and the skin glows with health. Sahaja-Bala is the natural strength and immunity present at birth. "Yuktikrita-Bala" is the strength gained through the use of Rasayana. Rasayana can thus play an important role in achieving Yuktikrita-Bala and thus improving body strength and immunity. A chapter of Prakara Yoga is included in the Ayurvedic pediatric text book Arogyakalpadruma, which deals with various immunomodulatory recipes and procedures to be followed beginning the day after delivery. This will keep the digestive power in check, the Doshas in balance, and the prevent the affliction with Balagraha (certain infectious diseases of childhood).<sup>6</sup> Swarna has been the world's most appealing and useful substance since the beginning of time. Swarna Bhasma (incinerated gold) has been used for centuries as a medicine in Indian traditional medicine. It is used in a variety of disorders such as Grahani (sprue), Pandu (anemia), Asthikshaya (osteoporosis), Jirna Vyadhi (chronic disorders), and so on due to properties such as rejunavator, aphrodisiac, memory booster, and so on. According to Ayurvedic texts, Swarna Prashana acts as Rasayana (immunomodulation) and increases memory in neonates and children. Gold nanoparticles have antiangiogenic and anticancer properties, according to recent research. Swarna Bhasma is an important component of Swarna Prashana for babies and children. Swarna Prashana, in a modified drop form, is now prescribed by Ayurvedic physicians to children and neonates as an immunity booster.<sup>7-8</sup>

### Swarna in Rasashastra

Swarna when heated on fire, it glows like the morning sun and produces kesar coloured lines, snigdha, and guru properties in comparison to other metals. Swarna was first used in dehavada and lohavada to make the body strong enough to achieve salvation or to convert lower metals into higher metals. Swarna was later used effectively for various ailments when chikitsavada evolved. The conversion of swarna in the most suitable form of the body was evolved during the period of rasashastra only, where it is being told to convert it into bhasma. Gold is recommended for internal use even before conception in order to have a healthy baby. Gold is said to play an important role after birth in Lehana (supplementary feeds) and Jatakarma Samskara. As the child grows, gold should be given alone or in combination with various herbal drugs to improve Agni (digestive power and metabolism), Bala (physical strength and immunity), Medha (intellect), Varna (color and complexion), Ayu (lifespan), and so on. A separate study found that gold nanoparticles actively inhibited Measles Virus infection in vero cells at a 50% effective concentration, most likely by directly blocking viral particles, demonstrating a potent virucidal effect. As per a study, nano-material has been shown to activate the complement system through several different pathways leading to particle opsonization and clearance.<sup>9</sup>

### Constituents of swarna prashana

Guduchi (*Tinospora cordifolia*) (Thunb. Miers) Green stem Kashaya (water extract) was prepared reducing to quarter. In 200 ml of Guduchi Kashaya, 50 ml of Ghee was added

along with Brahmi (*Bacopa monnieri* (L.) Pennell), Vacha (*Acorus calamus* L.), Jatamansi (*Nardostachys jatamansi* (D. Don) DC.), Ashwagandha (*Withaniasomnifera* (L.) Dunal), Shankhapuspi (*Convolvulus pluricaulis* Choisy), Yastimadhu (*Glycyrrhiza glabra* L.), Pippali (*Piper longum* L.) and Maricha (*Piper nigrum* L.) 2 gm powder of each and 50 ml of Murchita Ghrita (processed ghee) and cooked on low flame according to the preparation of medicated ghee as referred in Ayurvedic literature.<sup>10</sup>

### Health benefits

Swarna Prashana is a holistic approach to health care that focuses on the entire person rather than just the symptoms. Swarna Prashan clinic trial in children over three years old revealed a satisfactory response from parents in terms of improving their children's overall health, particularly against common viral infections. When given in six doses, Swaranamrit Prashan improved growth and development in toddlers. Swarna prashana has been shown to be effective in malnutrition and tuberculosis infections, as it has antibody production properties similar to IgA. Swarna Bhasma significantly increased the number of macrophages. IgG is the basis of the majority of our body's antibody-based defenses against pathogen invasion. The use of swarna Prashan in tuberculosis treatment can reduce the regular dose of Rifampicin. Swarna Prashan aids in the development of immunity as well as the growth and development of children.<sup>10-12</sup>

According to experimental evidence, gold nanoparticles have become more biocompatible metal nanoparticles in disease

diagnosis and therapeutics over the last several decades. Nanoparticles can be synthesized using biological conjugates, which reduces the toxicity of the nanoparticles produced. Similarly, swarna prashana was created by combining biological conjugates like ghee, honey, and herbs. This will strengthen the infant's defenses against pathogens, cancer cells, and inflammatory agents. In swarna prashana, gold particles are encapsulated by honey, ghee, and herbs, allowing the gold particles to form into a variety of sizes, shapes, charges, and compositions. Pathogens, in general, go through a number of mutations that occur naturally or are induced by man. As a result, a human system with non-specific immunity will be ready to defend itself against any pathogens or inflammatory substances that enter or develop in our system. In terms of immunological responses and cytotoxicity, gold nanoparticles clearly interact with target cells. Swarna Prashana can help reduce the prevalence of common viral and bacterial infections in children. Antimicrobial drug resistance, a major issue in paediatric health, may be reduced if this vaccine is introduced to children on time. Malnutrition problems can be reduced if it is included in routine childhood immunization. Although the process of developing immunity is slow, it has improved the quality of life of children and future adults.<sup>13-15,20-21</sup>

#### **Administration process**

It should be taken on an empty stomach, preferably first thing in the morning. It is given in doses of two drops up to six months and four drops after six months with clarified butter and honey. Swarnaprashana's dosage

has not been specified by Acharya Kashyapa. He has, however, given children general dosage based on age in the same context since birth. Swarnaprashana dosage can be determined using the same method.<sup>17</sup> It can be given from birth up to 16 years of age. It can be given daily for a minimum of 30 days and maximum of 180 days. Children with low immunity, low intellect, low memory power, and dyslexia should be given on high priority. Children suffering from fever, dysentery, and indigestion, etc. are contraindicated.

#### **Method of administration:**

Swarna Prashana is a safe ayurvedic combination that promotes a child's normal growth and development. In some studies, a 1 ml per day pack is given to parents who are advised to take it first thing in the morning on an empty stomach for three days. Most studies recommend Swarna Prashan 1-3 drops daily and monthly in Pushya nakshatra, depending on the age of the child. Swarna Prashan (Svarna Bhasma at a dose of less than 0.2 mg per dose) for three months is the most effective method. These 6-12 cycles should be repeated for maximum health benefits. The recommended method for giving this remedy to children is to administer 4 drops (each containing 2 mg of Swarna Bhasma).<sup>16-17</sup>

#### **Mechanism of action:<sup>19-22</sup>**

Swarna prashana contains smaller gold particles and molecular ingredients similar to those found in ghee and honey; these particles are highly stable, have low toxicity, and are immunogenicity conjugated. The molecular components help to cap gold particles in swarna prashan, which exhibits multivalent interactions between the particle

and membrane receptors of antigen-presenting cells (APCs) like dendritic cells. Targeting dendritic cells is one of the most effective strategies for promoting immunotherapies and vaccine development. Dendritic cells use a variety of mechanisms to internalize swarna prashana particles, such as receptor-mediated endocytosis, pinocytosis, and phagocytosis. Internalized particles, or antigens, are processed in the cytoplasm and trigger T cell responses based on the antigen presented by the MHC complex.<sup>18-20</sup>

Swarna prashana particles cause intercellular importation in dendritic cells. As a result, dendritic cells deliver multiple antigens to T cells effectively. Activated dendritic cells and T cells are thought to require soluble cytokines such as interleukins, TNF, and IFN to produce an immunogenic response. A potential application of swarna prashana in immunomodulation is the development of both prophylactic and therapeutic vaccines. A colloidal preparation of swarna (gold particles) with honey and ghee, similar to vaccines, would significantly induce robust immunity, according to ancient scripts. The benefits of biodegradable gold particles include use in the vaccinated organism, high loading efficiency for the target substance, increased ability to cross various physiological barriers, and low systemic side effects.<sup>18-21</sup>

#### Discussion:

COVID-19 is a viral pandemic that has affected even the most developed countries, and they are also unable to control the dreadful situation. In Ayurveda, Covid 19 disease is known as Janapadodhwamsaneeya Vikara.

There is still no specific medication available. However, the Ayurvedic system contains many effective immunomodulation methods. As a result, with the help of Ayurvedic concepts in which our ancient Acharyas already described various immunity booster medication and therapies that aid in achieving good immunity and being able to face any infectious diseases such as pandemics like Covid 19.<sup>22-24</sup>

Swarnaprashanam is a Rasayana chikitsa and one of the Prashana or Lehana for both healthy infants and diseased infants in terms of prevention and promotion. Swarnaprashana fulfills the first goal of Ayurveda, which is to take preventative measures (Swasthasya Swasthya Rakshanm). Our bodies' ability to check the microorganisms that cause disease deactivates or weakens. This is known as Vyadhikshamtva (immunity). Disease prevention through increased immunity has long been considered one of the most important aspects of infant development. Swarnaprashana is an orally administered natural immune booster. It is a one-of-a-kind vaccination method that has been used since Vedic times and is still used in parts of India today. Swarnaprashana can be used to achieve the best therapeutic results from birth to sixteen years of age.<sup>25</sup>

Swarna Prashana had no effect on T-cell activity, which increases vascular permeability, induces vasodilation, macrophage accumulation and activation, and results in an increase in paw volume, which promotes phagocytic activity. Swarna Prashana stimulates the humoral immune system. As a result, the findings provide

experimental evidence that Swarna Prashana can be used to effectively improve one's health and immune function. However, Acharya was well aware of the significance of Swarna refinement prior to internal administration. This is why they specifically mentioned the negative effects of gold when administered improperly. Appropriate processing should be used; that is, proper purification is required if pure gold is to be administered, and proper purification and incineration is required if Bhasma is to be administered after proper purification and incineration. The particles of Swarna Bhasma were discovered to be non-cytotoxic.<sup>26-27</sup>

### Conclusion

By following the lifestyle and guidelines given in ancient Ayurvedic literature, one can develop Vyadhikshamatva. A healthy lifestyle involves eating nutritious food, practicing hygienic habits, walking and exercising regularly and having adequate sleep. Rational use of food is primary for immunomodulation. Daily and seasonal regimen along with use of specific medicines like Rasayanas triggers immunomodulation. Some mixtures prove to be efficient for the health of the children and to fight the viral load. Swarna prashana has numerous advantages for children. When resistance power of the body is sufficiently stronger it destroys the causes. And this resistance power can be acquired by immunity which may be inherent or acquired. The benefits of biodegradable gold particles include use in the vaccinated organism, high loading efficiency for the target substance, increased ability to cross numerous biological barriers, and low systemic side effects. The immune

actions of biodegradable nanoparticles and gold nanoparticles as corpuscular carriers are most likely similar. Gold nanoparticles are being used in the development of next-generation vaccines due to recent data indicating low toxicity.

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