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Swarna Bindu Prashana: Ancient Wisdom meets Modern Science

Bishundayal Prasad Patel[1*], Shiv Mangal Prasad[2]

[1] Assistant Professor & Head Department of Dravyaguna Vigyan (Materia Medica & Pharmacology), Ayurveda Campus, Institute of Medicine, Tribhuvan University, Kathmandu, Nepal, [2]Associated Professer & Head Department of Kaumarbhritya/ Balroga (Ayu. Pediatrics), Ayurveda Campus, Institute of Medicine, Tribhuvan University, Kathmandu, Nepal

Editorial

BACKGROUND

The concept of Swarna Bindu Prashana (SBP), often translated as "Gold Pearl Immunization," is rooted in the ancient wisdom of Ayurveda, one of the oldest systems of medicine. *Kashyapa Samhita* is the root source of this wisdom, traced back to the 9th to 13th centuries.[1, 2] *Swarna Prashana* involves administering triturated gold mixed with honey and processed cow ghee, along with memory-enhancing medicinal herbs, in the prescribed dose from newborns to toddlers; it is sometimes referred to as Swarna Bindu Prashana.[3] *Swarna Prashana* is an act of *Jatakarma Samskara* as a cultural practice in India and Nepal for children, which is one of the 16 essential *Samskaras* (sacramental rites) described in Indian tradition.[4] It is considered one of the most powerful preventive and promotive health care procedures in the *Kaumarabhritya* (Ayurvedic Pediatrics), a branch of Ayurveda.

It is traditionally administered to children to enhance immunity, improve cognitive functions, and promote overall health. With growing interest in natural and complementary medicines, SBP has garnered attention as an immunomodulatory practice for pediatric populations.

This editorial discusses SBP in immunomodulation, analyzing its formulation, administration, mechanisms of action, and scientific evidence supporting its efficacy in pediatric populations. It explores SBP's use in promoting overall physical and mental development, especially during the critical early years of a child's life.

The Ancient Wisdom: The Three Key Components

The power of SBP lies in the synergistic combination of its three core ingredients, as described in the classical text Kashyapa Samhita.

Swarna (purified Gold) is considered a *rasayana* (rejuvenator) and a *vajikarana* (aphrodisiac and promoter of vitality). It is believed to be a potent carrier that enhances the efficacy of other substances. In its *Bhasma* (ash, calcined) form, gold is considered non-toxic and bioavailable. It claims to strengthen the immune system (*vyadhikshamatva*), enhance intellect (*medha*), memory (*smriti*), and concentration, promote physical strength (*bala*) and overall vitality (*ojas),* and detoxify the body.[5, 6]

Madhu (Honey) acts as a natural preservative and a *yogavahi* (catalyst)—a substance that carries the properties of other drugs deep into the tissues. It claims to be a vehicle (*anupana*) that enhances bioavailability. It also has its own properties of being a mild antiseptic and soothing for the throat.

Processed ghee (medicated Cow's ghee) is another quintessential *anupana* in Ayurveda. It claims to pacify *Vata* and *Pitta doshas* and carry the medicinal properties across the blood-brain barrier. The ghee is often processed (*siddha*) with potent *medhya rasayanas* (intellect-promoting herbs). The most common one is *Brahmi* (*Centella asiatica* (L.) Urban), which is renowned for boosting cognitive function and memory calming the mind. Other herbs like

***Corresponding author**
Dr. Bishundayal Prasad Patel
Assistant Professor & Head
Department of Dravyaguna Vigyan
(Materia Medica & Pharmacology)
Ayurveda Campus, Institute of Medicine,
Tribhuvan University
Kirtipur, Kathmandu, Nepal
Email: drbishun@gmail.com

Shankhapushpi (*Convolvulus pluricaulis* Forssk.), *Vacha* (*Acorus calamus* Linn.), or *Kushtha* (C.B. Clarke) and others are also used. This combination nourishes the brain and nervous system, promoting intelligence and a calm demeanor.

The ancient method of preparation, dose, route, and time of administration

The classical method is precise and must be performed by a qualified Ayurvedic practitioner.

Processing: Gold is heated and quenched with various plant extracts in a procedure known as *Putapaka* (incineration process) to create *Swarna Bhasma* (Gold ash). From a coarse powder, gold is hammered into a ribbon, ground with different plant extracts, and then burned in earthen crucibles at a high temperature (about 1000°C). Gold particles are mechanically comminuted to a smaller size with each cycle of the incineration phase, which is continued several times unless making it fine ash as per the characteristics of *bhasma* in *Rasa shastra* (alchemy).[7-9] This makes it biocompatible and non-toxic. *Preparation:* A specific, minuscule dose of this *Swarna Bhasma* (often equivalent to a few milligrams) is mixed with the medicated ghee and honey.[3] ***Dose:*** The Kashyap Samhita generally outlines dosages of drugs for children based on their age. In the instance of giving triturated Swarna to a newborn, merely a specified dose at a given time was provided. On the other hand, recent clinical studies showed that infants as young as one month were given 0.2 mg of gold ash in a drop of uneven mixture of processed ghee and honey as a vehicle. A child was given 12 drops of the preparation, which is equal to 2.4 mg of gold ash, with a monthly increase of 0.2 mg/drop until the child was 12 months old.[4] In another clinical study, 1.2 gm of Swarna bhasma was triturated with 50 ml of honey and 100 ml of the processed ghrita (unequal proportion). To maintain the consistency, the stainless-steel bowel of *Swarna Bindu Prashana* was kept in hot water. This preparation was used in a dose of 4 drops to children using dropper. Then each dose consists of 1.32 mg of Swarna Bhasma (24 drops=1 ml).[10] There was no mention of age-dependent dosage in the later clinical research on *Swarnamrita Prashana.* ***Administration:*** The mixture is administered to the child orally, typically on an empty stomach, early in the morning. *Ideal Time:* The most auspicious time for administration is considered to be the *Pushya Nakshatra* (the constellation Pushya or Pooyam).[6] It is believed that the moon's energy during this phase enhances the absorption and efficacy of the formulation. ***Duration:*** It traditionally is recommended to be given daily for at least 30 days, or periodically (e.g., every Pushya Nakshatra) for up to 16 years to achieve cumulative benefits.[11, 12]

Benefits of *Swarna Bindu Prashana*

Based on classical texts, these claimed benefits like enhancement of immunity, boosting intelligence and memory, improvement of digestion and appetite (digestive fire), promotion of physical strength and growth, detoxification of the body, prevention of allergies and respiratory disorders and calmness of mind.[3, 11]

Scientific validation of ancient wisdom

Modern advancements in medicine have made significant strides in treating diseases, yet challenges persist with recurring infections in children, particularly in those with weaker immune systems. One in five children globally do not have access to lifesaving vaccines. Almost all zero-dose children live in low- and middle-income countries, primarily in Africa and South-East Asia.[13] Multi-drug resistant pathogens, an increase in infectious illnesses, supply chain interruptions, conflict, geopolitical unrest, vaccination reluctance, and disinformation are all contributing factors to vaccine relapse in developing countries. In order to successfully handle present and future health difficulties, it is imperative that healthcare systems be strengthened and health equity be promoted.[14] These challenges and barriers to mainstream healthcare setting has further heightened the need for alternative approaches to strengthen immunity. In recent years, there has been a renewed interest in drug discovery strategies where natural products and traditional medicines are re-emerging as attractive options[15] and hence renewed interests in agents like *Swarna bhasma* for immunity boosting in children. Ayurveda's approach, focusing on preventive care and enhancement of natural defenses, presents a compelling case for integrating traditional practices like SBP into pediatric healthcare.

Few clinical studies including observational with small sample size reports on SBP that had shown positive trends. Bhaskaran *et al.* (2019) conducted a clinical investigation on SBP, the nonparametric assessment on immunomodulation and anthropometric measurement revealed significant results for the study outcomes, while the parametric statistical evaluation found no significant influence on the same outcomes.[16] A large-scale observational study by Rao *et al.* (2012) lacked parametric analysis to infer significance regarding increased appetite and weight gain in children, decreased incidence of recurrent upper respiratory tract infections, and improved performance on memory and intelligence tests; however, descriptive analysis of responses from parents of children fed SBP showed positive trends toward the outcomes.[10]

In adolescence (10-19 years), secondary sexual characters emerge, signifying the development of the reproductive system. In a previous research, traces of gold had been found in the human endometrium and decidua that looked for cyclic changes, including those that occur during pregnancy. Compared to various stages in the cycle, around mid-cycle reports slightly lower levels of gold.[17] According to semen analysis, it was found the highest source of gold found in biological elements in the male reproductive system.[18] A strong stimulatory impact of gold chloride on female reproductive activity in immature rats is suggested by another investigation.[19] This could be the appropriate time to benefit from *Swarna Prashana*'s fertility-boosting effects. It signifies claims on developmental effect of SBP administering up to the 16 years. Another descriptive research indicated that the colloidal gold was beneficial for improving cognitive function as assessed by IQ scores.

Honey: A prospective randomized controlled study was carried out on preterm infants with gestational age ≤34 weeks and postnatal age >3 days. After reaching half goal enteral feeding, medically graded bee honey was added to milk at a dose of 5, 10, 15, and 0 g/day for 2 weeks in the study groups. The addition of medically graded honey to milk formula was associated with changes in preterm babies' gastrointestinal bacteria and physical development.[20] However, WHO reports that infants younger than six months old are most commonly affected with infant botulism. Infants contract botulism when they consume *Clostridium botulinum* spores, which develop into bacteria that colonize the stomach and produce toxins. In most adults and children older than six months, this would not occur because the bacteria are prevented from germinating and growing by natural defenses in the intestines that develop over time.[21] Honey or products containing honey in infant's nutrient shall be processed in such a way as to destroy spores of *Clostridium botulimum.*[22]

Ghee: The presence of vitamins A and E in the *Ghee* (clarified butter oil) has an antioxidant effect and can reduce oxidative injury[23] and might contribute to reducing oxidative stress in neonates.

In a study of chronic toxicity of *Swarnabindu prashana* no cytotoxicity was observed.[23]

Governmental support for integrating it into national health systems

SBP is gaining popularity in India, Nepal and abroad as a natural supplement for child wellness. The primary concern is the safety, quality and preparation of the *Swarna Bhasma,* honey and ghee in infant's administration. On another hand, there is a need of large-scale, randomized controlled trials (RCTs) that meet modern scientific standards to conclusively prove all its claimed benefits. To provide adequate information on the safety, quality, and effectiveness of *Swarna bhasma*, honey, and ghee—data that will serve as reference pharmacopeial standards for government agencies and GMP-certified manufacturing enterprises globally—scientific study must be conducted. The product and its use in medical practice can be widely accepted at this point, allowing for integration into the mainstream healthcare system. SBP as a complementary wellness supplement, not a replacement for standard pediatric vaccinations and medical care.

Critical appraisal on SBP

Safety, quality and efficacy of pure gold versus *Swarna bhasma* or plain ghee versus processed ghee in different combinations of medicinal herbs should be evaluated to justify their recommendation for therapeutic uses. *Swarna bhasma* must undergo recommended *bhasmikarana* (incineration) process mentioned for gold in Ayurveda, especially in *Rasa Shastra.* The particle size, pharmacopeial quality parameters, safety measure, age dependent doses, duration of *bhasma* administration, and effectiveness in large population must be investigated for global acceptance.

Improperly prepared gold or *Swarna bhasma* can cause toxic; and unprocessed metallic gold can lead to heavy metal poisoning. This is why it is absolutely critical to obtain *Swarna bhasma* only from a reputable and GMP certified agencies meeting safety and quality standards recommended from government authorized agencies.

Since modern pediatrics advises against giving honey to children under one year of age due to the risk of infant botulism, quality assessment of different types honey is also crucial for recommendation in infant's feeding. A processing technique should be developed to purify honey from heavy metals, pesticides and microbial contamination, particularly *C. botulism* spores. Ghee must process in quality standardized raw materials, and product ultimately assures quality standards recommended for fatty/oily preparations. These all pharmacopeial parameters must be assured to maintain consistent in batch to batch product.

CONCLUSION

SBP is a profound and sophisticated form of ancient pediatric preventive healthcare. Its wisdom lies in the synergistic combination of powerful, processed natural substances aimed at building a foundation of robust health, intelligence, and immunity for a child's life.

While its traditional credentials are strong, parents considering it today should consult qualified professional, ensure the safety, identity, quality and purity of *Swarna bhasma*, honey and ghee before administration of SBP. Hence, certified professional can determine the correct formulation, dose, and schedule. When practiced correctly and safely, SBP represents a beautiful confluence of ancient wisdom and the timeless desire to give children the healthiest possible start in life.

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