



A Critical Review On The Immunomodulatory And Neurodevelopmental Effects Of Swarnaprashana In Pediatrics

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Abstract

Swarnaprashana is a traditional Ayurvedic pediatric practice described in classical texts such as *Kashyapa Samhita*, involving the administration of Swarna Bhasma (purified gold), along with ghee and honey, sometimes combined with Medhya herbs. It is traditionally recommended for improving immunity, intelligence, growth, and overall development in children. In recent years, this formulation has attracted scientific attention due to its claimed immunomodulatory and neurodevelopmental benefits. This review critically examines classical descriptions along with available experimental and clinical evidence to evaluate its therapeutic relevance.

Findings from existing studies suggest possible benefits in enhancing immunity and supporting cognitive development; however, inconsistencies in study design, small sample sizes, and lack of standardization limit the strength of conclusions. More rigorous and large-scale clinical trials are necessary before recommending widespread use in modern pediatric practice.

Keywords :- Swarnaprashana, Swarna Bhasma, Ayurveda, Immunity, Neurodevelopment, Pediatrics, Rasayana, Medhya Rasayana.

Introduction

In Ayurveda, childhood is considered a crucial phase for building immunity, intelligence, and physical strength. Among several preventive measures described for this purpose, Swarnaprashana holds a special place. It is mentioned in *Kashyapa Samhita* under pediatric care procedures and involves the oral administration of processed gold along with honey and ghee ⁽¹⁾.

Traditionally, it is believed to enhance resistance against diseases, improve mental abilities, and support healthy growth. In contemporary times, interest in this practice has increased as researchers attempt to explore its potential immunological and neurological effects using modern scientific methods ⁽²⁾.

Ayurvedic Conceptual Understanding

Swarnaprashana is mainly based on the principles of *Rasayana Chikitsa*, which focuses on rejuvenation and prevention of disease. It is also associated with *Lehana Karma*, which refers to supplemental feeding practices in infants and young children.

According to Ayurvedic theory, Swarnaprashana helps in improving:

- *Ojas* (immunity and vitality)
- *Medha* (intellect and memory)
- *Agni* (digestive strength)
- *Bala* (physical strength)

Gold is traditionally considered a substance that enhances mental clarity and resistance to disease, which forms the theoretical foundation of its pediatric use ⁽³⁾.

Immunomodulatory Effects

Traditional Viewpoint

Classical Ayurvedic literature describes Swarnaprashana as a formulation that strengthens the body's defense system and helps prevent recurrent illnesses in children ⁽³⁾.

Clinical Observations

Several clinical studies have reported improvements in immune status among children receiving Swarnaprashana. These include:

- Reduced frequency of common infections
- Improved general health and appetite
- Better growth patterns compared to control groups ⁽⁴⁾

Some studies also observed increased immunoglobulin levels, suggesting a possible enhancement of humoral immunity ⁽⁵⁾.

Evidence from Reviews

Systematic reviews have indicated that Swarnaprashana may contribute to improved immunity and reduced morbidity in pediatric populations, although the quality of evidence varies significantly across studies ⁽⁶⁾.

Possible Mechanisms

The immunomodulatory action may be explained by:

- Nano-sized particles of Swarna Bhasma influencing immune cells
- Activation of macrophages and lymphocytes
- Regulation of inflammatory cytokines
- Supportive role of honey and ghee in gut-mediated immunity ⁽⁷⁾

Neurodevelopmental Effects

Traditional Claims

Swarnaprashana is also classified as a *Medhya Rasayana*, which is believed to enhance cognitive functions such as memory, intelligence, and learning ability.

Clinical Findings

Available studies suggest that children receiving Swarnaprashana may show:

- Improved attention span
- Better learning ability
- Enhanced cognitive development scores ^(5,6)

Although findings are encouraging, they are not consistent across all studies due to methodological limitations.

Scientific Interpretation

From a modern perspective, the possible neurodevelopmental benefits may be linked to:

- Antioxidant effects protecting neurons from oxidative damage
- Influence on neurotransmitter activity, especially cholinergic pathways
- Improved synaptic plasticity
- Contribution of Medhya herbs like *Bacopa monnieri* and *Shankhapushpi* ⁽⁸⁾

Swarna Bhasma and Its Biological Role

Modern analytical studies suggest that Swarna Bhasma consists of fine, nano-sized gold particles. These particles may interact with biological systems in ways that explain its immunological and neurological effects.

Experimental research indicates that it may:

- Modulate immune cell activity
- Exhibit anti-inflammatory properties
- Influence cellular signaling pathways ^(7,9)

However, the exact pharmacological behavior is still not fully understood.

Safety Considerations

Despite its traditional acceptance, safety remains an important concern. Potential issues include:

- Risk of toxicity if improperly prepared
- Lack of uniform manufacturing standards
- Limited long-term safety data in infants and children
- Possibility of accumulation with prolonged use

Proper Ayurvedic purification and incineration methods are essential to ensure safety and therapeutic efficacy (9,10).

Discussion

The available evidence suggests that Swarnaprashana may have beneficial effects on both immunity and neurodevelopment. However, the strength of evidence remains limited due to several factors.

Firstly, most studies are observational or have small sample sizes, limiting generalizability.

Secondly, variability in preparation methods leads to inconsistent outcomes across studies. Thirdly, standardized cognitive and immunological outcome measures are often missing, making comparison difficult. From a mechanistic perspective, nano-sized particles in Swarna Bhasma may influence immune cell signaling, while Medhya herbs contribute neuroprotective and cognitive enhancing effects. Despite these promising hypotheses, robust clinical validation is still lacking ^(11,12). Therefore, while Swarnaprashana shows potential as a preventive pediatric intervention, it should currently be considered an adjunct rather than a replacement for established pediatric care.

Conclusion

Swarnaprashana is a widely recognized Ayurvedic pediatric formulation with potential benefits in immunity and neurodevelopment. Existing evidence suggests that it may support immune function and cognitive development in children. However, due to limitations in current research, its clinical effectiveness cannot yet be firmly established. More rigorous and standardized scientific studies are required before it can be integrated into mainstream pediatric practice with confidence.

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