

## A Review on Lehana as immunomodulation and its role as preventive aspect in children

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### ABSTRACT

**Introduction:** The leading cause of death for children and young adults worldwide is infectious diseases, are the main cause of the rise in perinatal infections, accounting for over 13 million deaths annually, or one in two deaths in developing nations, but they are also very common in India, particularly among children. The Acharya's describe similar methods for administering Lehana, which involve mixing all the ingredients together and giving it to the new-born. Therefore, the primary goal of this article is to review Lehana's role in immunomodulation and its role as a preventive measure for children. **Material and Methods:** Available literature related to Lehana were searched from available printed form of Samhita, and various text books, journals, web-based search engines source were referred for updated research data. **Results:** One of the most significant Lehana's mentioned in Ayurveda is Swarna Prashana, which improves a child's immunity, physical strength, and metabolism. With Lehana, sublingual or buccal administration methods were found to be comparable. The SLIT's mechanism is comparable to that of the Madhu-Ghrita prashana or Swarnaprashana Yoga, which involves administering the antigenic material honey along with Ghrita for improved absorption and transport. The addition of Swarna bhasma strengthens the body's immune system and functions as an all-around immunomodulatory therapy. **Conclusion:** Ayurvedic classics explain that Swarna, Ghrita, and Madhu have the properties best suited for administration to children. One way to think of gold's action is as a general defense mechanism or reticulo-endothelial system catalytic stimulation.

**Keywords:** Lehana, immunomodulatory therapy, Swarna Prashana

### I. INTRODUCTION

The infectious diseases are world's biggest killer of children and young adults. They account for more than 13 million deaths a year - one in two deaths in developing countries<sup>1</sup> but they are much common in India especially among children. Among the full term babies, the major cause of mortality is perinatal infections. Though National Vaccination Schedule is implicated, mortality rate in India is still high. Vaccines are successful in preventing certain diseases like polio, measles, diphtheria etc. but they are only a few. Vaccine takes almost 2-3 months for activation of immune system and to produce the specific immunoglobulin's against that specific antigen. So these are the major lacunae that lead to increase in perinatal infections.

Immunomodulator are becoming very popular worldwide in natural health industry as people start to realize the importance of a healthy immune system in the maintenance of health and the prevention and recovery of diseases. An immunomodulator is a substance that helps to regulate the immune system. This "regulation" is a normalization process, so that an immunomodulator helps to optimize immune response. Thus immunomodulator do not tend to boost immunity, but to normalize it<sup>2</sup>.

Kaumarbhritya is the first hand of support offered to a new born on his arrival to this world, to guide him towards a healthy living throughout the future. In the journey of life from birth to the death various Samskaras are mentioned in ancient science. Among these Samskaras, Jatakarma samskara are mentioned by different Acharyas. Under Jatakarma samskara, Lehana is described and these Lehana given in the Jatakarma samskara are nothing but the immunization process. The methods of administration of Lehana told by the Acharyas are similar viz. making the homogenous mixture of all contents and its licking to the newborn<sup>3</sup>.

Hence, review on Lehana as immunomodulation and its role as preventive aspect in children are the main aim of this article.

## II. MATERIALS AND METHODS

Information and data related to Lehana were searched from available printed form literature, i.e. from Samhitagrantha (Ayurvedic treaties) and also from various text books, journals, web-based search engines source were referred for research data and presented in systemic manner.

## III. LITERATURE REVIEW

### Concept of Lehana:

The description of Lehana in detail has been given in Leha Adhyaya of Kashyap Samhita one of the ancient book of Kaumarbhritya. Nature of food is grossly divided into Pana, Ashana, Bhakshya, Lehya. This denotes the process of food being sent in GIT. Lehya means a substance meant for Lehana (process of licking by tongue). Lehya are usually unctuous, sticky semisolids, a variety of medicinal preparation. In children, it is a convenient and safer way of medicinal administration. The purpose and object of Lehanakarma look to prevent the diseases by establishing due immunity and to promote the physical and psychic strength. The Sukham and Dukham i.e. health and disease stage are dependent on Lehanaprakriya<sup>4</sup>.

Swarna Prashana as Lehan, is described in Kashyapa Samhita in much detail. It is mentioned that, keeping face towards east, gold should be rubbed on a clean stone, then it should be mixed with Madhu and Ghrita and given to the infants for licking. Acharya Kashyapa who is considered as the pioneer of Ayurvedic paediatrics opines that this process of Swarna Prashana increases strength, gives long life; is auspicious, virtuous, and aphrodisiac, increases complexion and eliminates the evil effects of Grahas. Further it has been mentioned that Swarna Prashana (administration of gold) is said to bestow babies with qualities like Medha Agni Balavardhana with its specific Phalashruti as “vyadhibhir na cha dhrushyate”, when given in neonate for a period of 1 month. By using for six months, child is able to retain what-so-ever child hears (Shrutdhara)<sup>3</sup>.

Various Acharyas mentioned different Lehanas for the newborn mainly they are the combination of the Ghrita, Madhu and Swarna.

Acharya Charaka, mentioned only mixture of Ghrita and Madhu<sup>5</sup>. Madhu is collected by honey bees from different flowers, the pollen of which are antigenic in nature. Ghrita is a fatty substance which forms a good adjuvant material with Madhu. Not only adjuvant Ghrita being a well-known fat is turned into small globulines the chylomicrons, which undergoes absorption through the lymphatics of villi present in the inner wall of the small intestine<sup>6</sup>.

Swarna Prashana is said to bestow an infant with qualities like enhanced intelligence, metabolism, physical strength and immunity with its specific benefit as least prevalence of diseases if administered for a period of one month. Reports of toxicity study of Swarna bhasma had proven it to be safe for internal administration<sup>7</sup>.

### Swarna Prashana:

Swarna Prashana (Administration of Gold) is a unique and one of the best example of nano-medicine applied for preventive health care in Ayurveda. It has been traditionally practiced as a recipe for growth and enhancement of the immunity in children. It merely indicates the metal Gold which is considered to be one among the Shuddhaloha<sup>8</sup> (pure metal). The word Prashana means to eat, consume or lick<sup>9</sup>. Thus in short the word Swarna Prashana denotes the consumption of gold by means of licking.

### Administration of Swarna (gold) according to different Acharyas:

Acharya Sushruta further explains the administration of gold along with other herbs for a period of 1 year<sup>10</sup>. Acharya Dalhana explains in the commentary that there is an opinion of administration of these drugs till the age of 12 years. The term ‘Kumara’ is used in this context and so, it can be considered that gold is indicated in a child of the age group in whom development of reproductive system is not yet complete<sup>11</sup>. The word Kumara is also used in the references of Bhavaprakasha<sup>12</sup> and Yogaratnakara<sup>13</sup>. The formulation of gold is mentioned as Pushtikara Yoga (Nutritious formulation) in Bhavaprakasha. In all the references, it is said that gold should be administered along with honey and ghee as Anupana. The compiled references are listed in the table given below (Table 1 & 2).

**Table 1:** Formulations of gold used in Jatakarma Samskara and later

Sl.no.	Reference	Formulation	Dose	Indication
1	Sushruta Samhita	Swarna Churna (Powder of Gold)	1 Gunja	At birth <sup>10</sup> 3 times on 1 st day <sup>10</sup>
2	Ashtanga Hrudaya	Aindri, Brahmi, Vacha, Shankhapushpi, Haritaki, Swarna Churna & Amalaki	1 Harenu	At Birth (Single dose) <sup>14</sup>
		Swarna Churna, Shweta Vacha, Kushtha, Arkapushpi, Matsyakshaka, Kaidarya, Vacha	1 Harenu	Till 1 year <sup>14</sup>
3	Sharngadhara Samhita	Swarna	Not mentioned	At birth (Single-dose) <sup>15</sup>
4	Rasaratna samuchchayachaya	Kana (Pippali) & Swarna	1/4 <sup>th</sup> Ratti	At birth (Single-dose) <sup>16</sup>
5	Kalyanakarakam	Swarna Bhasma, Vacha, butter/ghee	Alpamatra acc. to agni	Acc.to age of infants <sup>17</sup>
6	Bhaishajya Ratnavali	Swarna Bhasma, Kustha, Vacha, Haritaki & Brahmi	1/32 Ratti	Till 1 year <sup>18</sup>

**Table 2:** Formulations of gold in older children

Sl.no.	Reference	Formulation	Dose	Indication
1	Sushruta Samhita	Swarna, Brahmi & Shankhapushpi Swarna, Arkapushpi, Vacha churna Swarna, kaidarya, Shweta durva	According to age	In Kumara <sup>10</sup>
2	Bhava Prakasha	Swarna churna, Kustha, Vacha Swarna, Brahmi & Shankhapushpi Churna Swarna, Arkapushpi & Vacha Churna Swarna, Kaidarya & Shweta Durva	Not mentioned	In Kumara <sup>12</sup>
3	Yoga Ratnakara	Swarna Churna, Kustha, Vacha Swarna, Brahmi & Shankhapushpi churna Swarna, Arkapushpi & Vacha Churna	Not mentioned	In Kumara <sup>13</sup>

### Importance of the Lehana:

Several materials for Lehana enlisted in the Adhyaya reveal all the varieties of drugs, viz. Medhya, Balya, Dipana, Pachana etc. Kashyapa mentioned all of the materials with reference to children only whereas the other classics described them in general. Many of the materials to be given to the neonate only. There the purpose and the object are to induce immunity besides other aspect like longevity, intelligence, complexion etc.

Some other Lehya indicated to the infants during weaning might be aimed at extending as food of supplemental value whereas some other Ghrita or powders advocated during Bala Vikasa might be to support growth and development by

augmenting anabolism and some others are directly advised in certain diseases<sup>19</sup>.

Formulations described for the purpose of Lehana are-

- Swarna Prashana
- KalKyanaka Ghrita
- Panchagavya Ghrita
- Brahmi Ghrita
- Abhaya Ghrita
- Samvardhana Ghrita.

Certain herbal drugs are also mentioned in the same context which is to be administered along with ghee and honey. In brief all the Lehana formulations are cited to be beneficial in increasing

metabolism, intellectual capacity, physical strength and immunity.

Swarna Prashana is the first formulation explained by Acharya Kashyapa in the context of Lehana.

Vighrushyadhautedhrushatiprangmukhilaghunamb una I

Aamathyamadhusarpirbhyamlehayetkanakamshishum II

Suvarnaprashanamhyetanmedhagnibalavardhanam I

Aayushyamangalampunyamvrushyamvarnyamgrahapaham II

Masatparamamedhavivyadhibhirna cha drushyate I  
Shadbhirmasai: shrutadhara:

suvarnaprashanatbhavet II (Ka. Su.18)

This unique formula has been explained wherein gold should be triturated along with water; honey and ghee on a pre-washed and clean stone facing eastern direction and made the Shishu (infant) lick the same. The specific benefits ascribed to Swarna Prashana are as follows.

- Medha Agni Bala Vardhanam (Improvement of intellect, digestion, metabolism, immunity and physical strength)
- Ayushyam (promoting life span)
- Mangalam (auspicious)
- Punyam (righteous)
- Vrushyam (aphrodisiac)
- Varnyam (enhancement of colour and complexion)
- Grahapaham (protection from all evil spirits including microorganisms).

The specific benefits of Swarna Prashana according to the duration of administration has also been mentioned as,

- If administered for 1 month, the baby will become Parama Medhavi (highly intelligent) and Vyadhibhir Na Cha Drushyate (will not be affected by any diseases)
- If administered for 6 months, the baby will become Srutadhara (will be able to remember the things which are just hear)

All the above said benefits indicate the enhancement of all favourable factors required for proper growth and development of a child, which is considered to be rapid during Shaishava Avastha (Infancy).

#### IV. DISCUSSION

Swarna Prashana is one of the most important Lehana mentioned in Ayurveda which

enhance the qualities like metabolism, physical strength and immunity in children. In ancient science, various Acharyas have mentioned various Lehana for the new-born mainly they are the combination of the Ghrita, Madhu and Swarna<sup>20</sup>.

It can be said that the benefits of Swarna Prashana can be attained from infancy to adulthood with a wide range of actions influencing the growth and development of a child. The age at which it can be administered is dependent upon the expected effect in the body. As a general tonic it can be administered in any age group. For the benefit as an immuno-modulator it should be administered in children in early ages of neonatal i.e. one month after birth is considered to be the most vulnerable time for infectious diseases due to immature immune system. Immaturity of the new-born immune system leads to a 'physiological immunodeficiency' that encompasses all arms of the host response as reflected by the increased susceptibility of young children to infections by both viral and bacterial pathogens<sup>21</sup>.

Sublingual or the buccal route of administration found to be similar with Lehana. Within the oral mucosal cavity, the buccal region offers an attractive route of administration for systemic drug delivery in which the drug is placed under tongue or crushed in the mouth and spread over the buccal mucosa<sup>22</sup>. Within the oral mucosal cavity, delivery of drugs is classified into three categories: (i) sublingual delivery, which is systemic delivery of drugs through the mucosal membranes lining the floor of the mouth, (ii) buccal delivery, which is drug administration through the mucosal membranes lining the cheeks (buccal mucosa), and (iii) local delivery, which is drug delivery into the oral cavity.

As Lehana has the same concept of route of administration for the children in concern to palatability and convenience. There are two permeation pathways for passive drug transport across the oral mucosa: para-cellular and transcellular routes. Permeates can use these two routes simultaneously, but one route is usually preferred over the other depending on the physicochemical properties of the diffusion. Since the intercellular spaces and cytoplasm are hydrophilic in character, lipophilic compounds would have low solubility in this environment. The cell membrane, however, is rather lipophilic in nature and hydrophilic solutes will have difficulty permeating through the cell membrane due to a low partition co-efficient. Therefore, the intercellular spaces pose as the major barrier to permeation of

lipophilic compounds and the cell membrane acts as the major transport barrier for hydrophilic compounds<sup>23</sup>. Acharya Kashyapa has described all Ghrita based Lehana formulations in his Lehanadhaya of Sutrasthana like Samvardhna Ghrita, Kalyanaka Ghrita, Panchagavya Ghrita, Bhrahmi Ghrita etc. these all are the lipophilic substances are mainly advised to be administered through the sublingual route. They are get absorbed through the sublingual mucosa which is relatively permeable, giving rapid absorption and acceptable bio-availabilities of many drugs, and is convenient, accessible, and generally well accepted by the babies.

Nowadays, Sublingual Immunotherapy (SLIT) is method of allergy treatment that uses an allergen solution given under the tongue, which over the course of treatment, reduces sensitivity to allergens. Sublingual immunotherapy, or SLIT, has a very good safety profile and is given at home in adults and children<sup>24</sup>. The mechanism of the SLIT is similar with that of the Madhu-Ghrita prashana or Swarnaprashana Yoga, in which the antigenic material honey with Ghrita is administered for its better transport and absorption, the added Swarna bhasma further enhances the immune system of body and act as an overall immunomodulatory therapy.

The properties of Swarna Bhasma like Rasayana, Hrudya, Balya, Vishapaha and Param Ojo Vivardhana are the attributes to its effect on immune system.

## V. CONCLUSION:

Acharya Kashyapa coined the term Swarna Prashana under the context of Lehana. The word Swarna Prashana depicts the administration of gold along with ghee and honey with or without herbal drugs in the form of Lehana/Prashana (by licking). Swarna, Ghrita and Madhu possess the properties which are most suitable for administration in children as explained in Ayurvedic classics. The action of gold can be considered as the catalytic stimulation of the reticulo-endothelial system or general defence mechanism.

## COMPETING INTEREST

No competing interest exist.

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