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IMPORTANCE OF AYURVEDIC IMMUNIZATION VIZ. SWARNAPRASHANA : A CRITICAL REVIEW

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ABSTRACT:

Introduction: While we can attribute many public health successes to vaccination, the future presents continued challenges. Despite advancement of medical technologies, diseases remain for which researchers have been unable to find effective vaccines (such as HIV/AIDS, malaria etc.). Further, the cost of vaccines is too high for poorer countries to afford. Also, vaccines are disease specific and therefore lots of vaccines are required to prevent diseases as new bugs are concurrently emerging. Therefore this is the high time for a nation to encourage the traditional system of medicine which provides a potential mechanism for development of immunity in children.

Material and Methods: Various *Ayurveda* classics and studies published in journals related to *Ayurveda lehana* are reviewed and analyzed.

Result: Analysis of *classical* references and various experimental studies shows that *Ayurveda lehana* drugs possess immuno-modulatory, intellect promoting and nutritional properties.

Conclusion: *Lehana* can be administered in all children as prophylactic as it acts at the level of nutrition, metabolism, growth and development, physical strength, and immunity. The purpose of *Lehana* is not only same as of modern vaccination to prevent disease but also building immunity, ensuring proper growth and development and improving overall health of the child.

KEY WORDS: Immunization, immuno-modulatory, *Lehana*

INTRODUCTION:

In recent years India has attained impressive achievements in child survival. A fast decline in Infant mortality rate (IMR) of country has been observed. The IMR has dropped by an average rate of 4.56% per year over last five years. However, at the current pace, the country will miss the target to achieve the fourth Millennium Development Goal (MDG-4), which aims to reduce under-five mortality rate and IMR by two-thirds between 1990 and 2015.

Although the traditional system of medicine can attribute many public health successes to vaccination, the future presents continued challenges. Despite advancement of medical technologies, diseases still remain for which researchers have been unable to find effective

vaccines (such as HIV/AIDS, malaria etc.). Further, the cost of vaccines is too high for poorer countries to afford. Also, vaccines are disease specific and therefore lots of vaccines are required to prevent diseases as new bugs are concurrently emerging. Therefore this is the high time for a nation to encourage the traditional system of medicine which provides a potential mechanism for development of immunity in children.

The principles of vaccines for improving the immunity was also described thousands of years ago in Ayurveda in the form of countless formulations for children and adults. "*Lehana*" (means intake of medicine by licking) is one such traditional special formulation, mentioned in *Ayurveda* classics, they have been used to enhance

growth & development by providing sufficient nutrition, promote health, complexion and strength (immunity), protecting from various infections along with improving intellect and speech (delayed milestone).

AIMS AND OBJECTIVES:

- To provide evidence based immune-modulatory drug for children to make them free from diseases
- To ensure proper growth & development of children.

MATERIAL AND METHODS:

The materials were collected from the classical Ayurveda literatures and research journals. Search focused on various *Lehana* formulation for children for improving their immunity.

Some of Various compound formulations of *Lehana* mentioned in classics

1. Kashyapa Samhita

- *Swarnprasana*(administration of Gold *Bhasma*)- Pure gold (in small quantity) is rubbed in water on a clean stone & given with honey and *ghrita* in unequal quantity, to the newborn result in promotion of health, ensures proper growth and development, provides complexion & strength (immunity),
- *Panchgavyaghrita*,
- *Brahmighrita*,
- *Abhayaghrita*,
- *Samvardhanaghrita* (effective in children with delayed milestones) (*Kashyapa Samhita Sutrasthana, Lehaadhyaya*, p.4-6).¹

2. AshtangaHridaya:

- *Sarshvataghrita* (inhanse verbal ability, memory and intellectual enhancer and appetizer) (*AstangaHridyaUttaratantra*1/45, p.885),²
- Combination of *vacha*(*Acorus calamus*) and *swarnabhasma* with honey and *ghrita* (body compactness, intellect, immunity and complexion enhancer)(*AstangaHridyamUttaratantra* 1/47, p.885)³ etc.

3. Sushruta Samhita:

Described 4 recipes (containing gold) which provide general immunity, body resistance, helpful in growth & development & enhancing

the intelligence (*Sushruta Samhita Sharirsthana* 10/72-74, p.84).⁴

These are:

- 1) *Swarnbhasm* with *kustha* (*Saussurea lappa*), *vacha* (*Acorus calamus*), *madhu* (honey) & *ghrita*.
- 2) *Swarnbhasm* with paste of *brahmi* (*Bacopa monnieri*), *shankhpushpi* (*Convolvulus pluricaulis*), with honey & *ghrita*.
- 3) *Swarnbhasm*, *arkpushpi* (*Pueraria tuberosa*), *vacha*(*Acoruscalamus*), honey & *ghrita*.
- 4) *Swarnbhasm*, *kaidarya* (*Azadirachta indica*), *swetadurva* (*Cynodon dactylon*), *ghrita*.

CLINICAL AND EXPERIMENTAL EVIDENCES:

Various clinical and experimental studies document the immune enhancing effect of the *Lehana* drugs especially *Swarnabhasm*.

A. Immune Response-

- Study documents that both specific and nonspecific immune responses were modified in a positive manner in *Swarnabhasma* 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 form⁵.
- The increase in the serum IgG level in the Gold compound group shows the immunological response of the rats against the antigenic material.⁶
- One more study showed that gold nanorods (GNRs) inhibit Respiratory syncytial virus (RSV) in HEp-2 cells and BALB/c mice by 82% and 56%, respectively. The RSV inhibition correlated with marked upregulated antiviral genes due to GNR mediated TLR, NOD-like receptor and RIG-I-like receptor signaling pathways. Transmission electron microscopy of lungs showed GNRs in the endocytotic vesicles and histological analyses indicated infiltration by neutrophils, eosinophils and monocytes correlating with clearance of RSV. Further, production of cytokines and chemokines in the lungs indicate recruitment of immune cells to counter RSV replication⁷.

B. Antioxidant Activity-

- The antioxidant and restorative effects of *SwarnaBhasma* in rats have been demonstrated. Two antioxidant enzymes superoxide dismutase (SOD) and catalase were measured after oxidative insult with acetic acid in *Swarnabhasma*⁸. Another study document that high aspect ratio Au nanorods can act as an effective antioxidant and antibacterial agent⁹.
- C. Growth and Development-**
- Study of 120 children age group ranging from 0 to 12 years, proved that *Swarnaprashana* therapy significantly improve weight in both male and female children.
 - It also affects overall body development process. *Swarnaprashana* as trial drug and *Madhujala* as placebo was administered in children of trial group and control group respectively, for 14 times in duration of 1 year. Growth parameter weight and height was assessed on every visit of children.
 - It is found that *Swarnaprashana* showed significant ($p < 0.05$) improvement in weight gain. *Swarna* is *Sheet*(cold) in *Virya*, *Madhura* (sweet) in *Vipak* and *Madhur* (sweet), *Tikta* (bitter), *Kashaya* (astringent) in *rasa*. It provides *Bala* (strength) to the body.
 - It shows *brumhanakarma* (bulk promoting action), which is expected here, with the help of *Madhur rasa* and *Madhur vipaka* increase in the *Rasadidhatu* (*tissues*) is possible and occurs gradually¹⁰.
- D. Effect on Brain functions-**
- Gold reduces the effects of depression, as well as enhances the ability to focus¹¹. Gold can have a balancing and harmonizing effect on the body particularly with regard to unstable mental and emotional states, such as depression. It is believed that the nanometer sized particles in colloidal Gold affect the electrical charges that are produced in neurons. It enhances the normal synaptic communication that takes place between the nerve cells. This enhancement is believed to be responsible for increased brain functions.
- Safety of Gold compounds:** Acute oral administration (continuous for 8 weeks on albino mice; 10 mg/20g b.w./day) of *Swarnabhasma* had

not reported any toxic effects as assessed by liver function tests and histological investigations¹².

DISCUSSION:

Though National Immunization Schedule is implemented, mortality rate in India is still high. From the first day of life vaccination schedule is started but these all vaccines are not able to protect the child from the diseases like major bacterial infections, viral infections and primary-secondary immunodeficiency syndromes are not preventable by specific vaccines. The vaccine takes almost, few months for activation of immune system and to produce the specific immunoglobulins against that specific antigen. Recent immunization data shows that vaccinations and immunization schedules are not sufficient to control the diseases. So these are the major lacunas that lead to increase in postnatal infections, hence it is the need of the country to make available an immunomodulatory agent which boost up overall the immune system of body and helps to protect children from recurrent infections. It should be palatable to child and cost convenient so that it will be affordable to all type of socio-economic classes. In Gold preparations nano particles of *Swarna* can also be absorbed directly into the blood stream through sublingual route. *Lehana* can be administered in all children as it acts at the level of nutrition, metabolism, growth and development, physical strength and immunity¹

Ancient Indians used different *Lehana* preparations for *Swarnaprashana*. Gold nano particles are capable of encapsulating active drugs and targeting. This proves the *Yogavahi* (*Bioavailability enhancing*) property of *Swarna*. This nano-technology has been used in treatment of brain malignancy. It is believed that the nanometer sized particles in colloidal Gold affect the electrical charges that are produced in neurons. It enhances the normal synaptic communication that takes place between the nerve cells. This enhancement is believed to be responsible for increased brain functions. The clinical study has been going on etherium Gold (Monatomic White Gold) which increases the amplitude of alpha waves in the brain. Alpha brain waves are associated with greater intelligence, enhanced creativity and learning ability, improved mind/body coordination¹.

The ancient *Ayurvedic* text '*Rasa-Jala-Nidhi*' states: "Gold is soothing, pure, nutritive, curer of poison,

phthisis, insanity and other diseases. Gold improves vitality, fortune, beauty, intelligence and memory²

Swarnaprashan or the *Lehana* are believed to be the first immunization given immediately after birth even before umbilical cord was cut and the baby was breast-fed by the mother. *Swarnabhasm* (nano particles) was rubbed with honey and ghee and given to the baby to lick. This has been regarded to as to increase immunity (against bacterial as well as viral infections), boost Intelligence, digestive fire & physical strength in the children

Kasyapa, Sushruta and *Vagbhata* describe a special formulation by the name of *Lehana* for this purpose which enhances immunity and thus minimizes infection episodes, from the childhood period. While describing the benefits of *Swarna Lehan*, *Kashyap* opines that, by feeding the gold for one month, the child is not attacked by any disease.² This classical description implicates that ingestion of *Swarna* modulates immune mechanism, so that morbidity is reduced. Also *Swarnaprashan* is cost effective putting low economic burden on the country.

Mode of Action of *Swarnaprashana yoga*:

- *Vacha* (*Acorus calamus*) is *Medhya (intellect promoting)* and possesses, Neuroprotective propertiesⁱⁱ.
- Ghee has *Medhya (intellect promoting)*, *Oja-Teja-Bala-Ayushya Vriddhikar (provides vitality, lustre, strength and longevity)*, *Vrishya (aphrodisiac)*, *Rakshoghna* (Immunostimulant activity).
- Further, *Ghee* acts as natural source of the fat soluble vitamins (Vit. A, D, K), traces of Fe, P, Cu, β carotene. *SwarnaBhasma* is *Vrushya (aphrodisiac)*, *Ayushaya (provides longevity)*, *Balya (provides strength and immunity)*, *Bruhana (anabolic)*, *Ojowardhana (increases vitality)*, *Sarvavishapaham (antitoxin)*, *Garaharam (antitoxin)*. *Madhu* (Honey) contains antigenic material – ‘Pollens’.
- All these drugs are mixed together to produce an emulsified mixture like small fat globulins-chylomicrons which helps in absorption through the oral mucosa. Small quantities fatty acids are absorbed directly into the portal blood rather than being converted into triglycerides and absorbed by lymphatics and

intestinal epithelial cells allows direct diffusion into the capillary blood of the intestinal villa. Antigens in the honey are taken up by dendritic cells which interact with T lymphocyte striggering the Immunological response and body produces antibodies against antigen. Some drugs cross the Blood Brain Barriers and gives *Medhya (intellect promoting)* effect.

CONCLUSION:

Pharmacological and clinical trials on *Swarnabhasma* proved that it helps to build immunity and cognition in children. Toxicological studies reveals that classical preparations are safe for long time use. Modern researches on gold and gold compounds also support the *Swarnaprashana* concept of *Ayurveda*. So there is need of today to update the current immunization schedule with *Lehana* in child. *Lehana* can be administered in all children as prophylactic as it acts at the level of nutrition, metabolism, growth and development, physical strength and immunity. The purpose of *Lehana* is not only same as of modern vaccination to prevent disease but also building immunity, ensuring proper growth and development and improving overall health of the child. So there is need of today to implicate *Swarnaprashan* in National Immunization Programme along with vaccination.

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