

LEHANA: AS AN IMMUNOMODULATOR FOR LONGEVITY AMONGST INFANTS

Dr. Deepthi P.*¹ and Dr. Karunya J. G.²

¹Assistant Professor, Department of Kaumarabhritya SMBT Ayurved College and Hospital,
Nashik, Maharashtra.

²Assistant Professor, Department of Kaumarabhritya Bapuji Ayurveda Medical College,
Shivamogga, Karnataka.

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*Corresponding Author

Dr. Deepthi P.

Assistant Professor,

Department of

Kaumarabhritya SMBT

Ayurved College and

Hospital, Nashik,

Maharashtra.

ABSTRACT

Childhood, the stage which lays the developmental foundation to an adult life; is a stage of *Aparipakwavastha* (immaturity) of *dhatu*s including *ojas* (essence of vitality), where in, the innate and adaptive immunity are immature making the child highly vulnerable to all diseases. Infantile period marks the development of both innate and adaptive immunity and introduction of immune boosters at this age is appropriate in building the immune system. Rightly Acharya Kashyapa has put forth the concept of *Lehana* (electuaries) in infants, because *Lehana* supports unperturbed growth and development of child by improving *vyadikshamatwa* (immunity) and *bala* (body strength) in early stages of life has a direct bearing on longevity.

Lehana formulation has a special effect in infants with quicker action as the partial absorption of medicine occurs through the buccal mucosa. This paper is an attempt to analyse the immunomodulatory action of *lehanadravyas* in the light of modern concepts of immunity

and its effect on longevity.

KEYWORDS: Lehana, Immune Booster, Longevity in Children.

INTRODUCTION

Newborn faces a complete set of immunological demands for the Protection against infection, Avoidance of harmful inflammatory immune responses, Balancing the transition from sterile

intra uterine environment to a world rich in foreign agents. These demands shape the distinct neonatal innate immune system that is biased against the production of pro inflammatory cytokines. This bias renders newborns at risk of infection & impairs responses to many vaccines. Innate immune system is muted at birth to tolerate non shared maternal antigens and to ignore the considerable amount of stress and remodeling that takes place during development, this makes the newborn susceptible to the viral & bacterial infections.^[7] An infant's adaptive immune system is functionally distinct and uniquely regulated compared to later life and infants do not have the ability to have long lasting immunity.^[7] The immune stimulus, immune cross talks from maternal Antibodies and microbial colonization are key regulators of infant's adaptive immune responses. Maternal Antibodies neutralizes live vaccines, which may contribute to low responses; inhibit the activation of B cell clones which leads to attenuated neonatal antibodies response to other vaccines.

The Gut microbiome can substantially modulate the host antibodies repertoire and response to infections in early life. Microbial colonization must be achieved within a narrow perinatal period known as "window of opportunity." Understanding the early life immunity is critical in developing immune based interventions to combat pediatric infectious diseases.^[6]

Immunity of body is represented as Bala, Ojus, Vyadikshamatwa and ojus is the excellence/parama uthkrishta sara of saptadhatus. As infancy is the stage of Aparipakwa dhatwavastha (structurally and functionally), the ojus(Apara ojus) is not much functionally mature in newborns and infants. Innate, adaptive immunity and ojus are in dormant state leading the infant susceptible to broad spectrum diseases, there by necessitating the supplementation of highly potent immunomodulator in infancy such as Lehana.

AIM AND OBJECTIVE

- To analyse the immunomodulatory effect of Lehana in infants.
- To understand the benefits of Lehana in pediatric age group and its effect on longevity.

METHODOLOGY

This paper is based on Lehana Adyaya from Kashyapa Samhita Sustrastana (18th chapter) and it's an attempt to analyse the immunomodulatory action of *lehanadravyas* in the light of modern concepts of immunity and its effect on longevity.

a) Source of Data

Literary data was collected from the Samhitas, contemporary modern texts, reputed journals, research articles, web sources and related works from different Universities

LEHANA means Licking/Lickables(लेहः → लेहनमिति), therefore its a unique concept in Ayurveda as a mode of administration of medicine and also as supplementary food. The method of preparation of Lehana in infants are entirely different from the Avaleha Kalpana (upakalpana of kwathakalpana). Lehana in infancy is in the form of :-

- (i) Oushada choorna+ Madhu+Ghrita
- (ii) Medicated ghrita +Madhu

b) Importance Of Lehana In Infants

Lehana has multifactorial & multidimensional approach to growth & development. Infancy is the stage of growth spurt, where rapid growth and development happens, lehana will act as the best supplement modality in this period. Palatability is one of the prime reasons for the lesser proliferation of Ayurvedic drugs that are administered orally, lehana medicines resolves the palatability issues in children as it mixes with honey & ghrita. Lehana, because of the form, it is easily absorbable and the digestion starts from the mouth by mixing with saliva.

- (i) **Madhu (Honey)** has yogavahi property, so^[1] it will improve the potency of all other oushada dravyas mixed with it. It has known antigenic activity, which stimulates the immune system. It Exhibits broad spectrum therapeutic properties (anti-bacterial, anti-viral, anti-fungal and anti-inflammatory actions)
- (ii) **Grita (Ghee)** - Butyric acid in ghee will strengthen the gut and it's a good source of fat-soluble vitamins. Infancy is the stage of growth spurt, where rapid growth and development happens, lehana will act as the best supplement modality in this period.

DISCUSSION

- a) **Lehana's role on Immunity-** Lehana is beneficial in infancy as it helps in Stimulating the functions of innate immune system. Lehana will Improve the gut microbiome thereby improves the adapative immune system of infants. Lehana dravyas will stimulate dhatwagni Deepana (tissue metabolism) through Jataragnideepana (Digestive fire) which

results in increase of dhatu prasannatha (good quality of dhatus) & results in Ojovridhi/Balavridhi.

Lehanadravyas (swarana,ghrita) can also directly increase the prakritakarma(basic function) of Bala/Ojus and will results in स्थिरोपचित मांसता (strength), स्वरवर्ण प्रसाद, सर्वचेष्टास्वप्रतिघात, बहय आभ्यन्तर करणानां आत्म कार्यप्रतिपत्ति.^[4]

b) Different lehana dravyas of kashyapasamhita as immunomodulators- Various lehana yogas are mentioned in Kashyapasamhita sutrastana, lehana adhyaya. However, this paper highlights the immunomodulatory effect of few yogas mentioned in Lehana adhyaya (Table 1).

Table 1: Immunomodulatory Effect of various Lehana Yogas.

| Ser No. | Name | Ingredients | Phalasruti | Immunomodulatory Effect |
|---------|---------------------------|--|---|--|
| 1. | Balavardhaka yoga | Samanga, Triphala, Brahmi, Dwibala, Chitraka | मधुसर्पिरिति प्राश्यं मेधायुर्बलवृद्धये | Manjishta- increase in serum Ig level Triphala-Increase in T and B cells ^[11] Hareetaki - improve humoral immunity Vibheetaki - Has better role in cell mediated immunity Amalaki -improve WBC count and % of lymphocyte. Brahmi - has proven role in increasing IgA and IgG DwiBala-Significant increase of mean serum levels of IgG, IgM, IgA |
| 2. | Samvardhana Ghrita | kwatha of khadira, prisniparni, syandhana, saindhava, dwibala, kebuka +milk+ghrita | निर्व्यधिर्वधते शीघ्रं.... ^[3] | Khadira- stimulatory effect on humoral immunity. Prisniparni –anti microbial activity and antioxidant activity. Syandhana/Arjuna – Proven antioxidant activity and has significant activity on invitro human neutrophils. ^[6] |
| 3. | Suvarnaprasa | Suvarna, Madhu, Ghrita | स्वर्णप्राशनं हयेतन्मेधाग्निबलवर्धनम् | Effect on cell mediated immunity Effect on rise in serum IgG levels) ^[5] |

(i) **Bala Vardhaka Lehana Yoga (Ka.Sa)- s** The ingredients of Bala Vardhaka Lehana are Samanga, Triphala, Brahmi, Dwibala, Chitraka alongwith Madhu and Ghrita. Kashyapa Samhita explains that the bala Vardhaka Lehana Yoga enhances Bala, described as under:-

.... मधुसर्पिरिति प्राश्यं मेधायुर्बलवृद्धये ।^[2]

Bala can ideally be corelated with Immunity. The following medicines and its efficacy has already been proven and substantiates the phalashruti mentioned above. Manjishta's Ethnolic extract has proven immunomodulatory effect by increasing the serum Ig level. Triphala itself act as an important *Rasayana*. Hareetaki-the aqueous extract has proven role in improving the humoral immunity, Vibheetaki has better role in cell mediated immunity, Amalaki, with its aqueous extract proved to improve WBC count and percentage of lymphocytes. Brahmi, plays an instrumental role in increasing IgA and IgG. After 3 months of administration it has been observed that Dwibala significantly increases the mean serum levels of IgG, IgM, IgA.^[9]

(ii) **Samvardhana Ghrita (KA.SA.su)**

The ingredients of Samvardhana Ghrita are kwatha of khadira, prisniparni, syandhana, saindhava, dwibala, kebuka along with milk and ghrita. Kashyapa Samhita explains that the Samvardhana Ghrita prevents recurrent onset of diseases and is described as under:-

घृतम् सम्बर्धनम् नाम लेह्यम् मधुयुतम् सदा। निर्व्यधिर्वधते शीघ्रं....^[3]

The following medicines and its efficacy has already been proven and substantiates the phalashruti mentioned above. Khadira-Heartwood extracts has proven stimulatory effect on humoral immunity. Prisniparni -The different plant part extract and isolated bioactive compounds showed anti-microbial activity and antioxidant activity. Syandhana/Arjuna – Proven antioxidant activity and has significant activity on invitro human neutrophils.^[6]

(iii) **Suwarnaprasana (KA.Su)-** The main ingredients of Swarnaprasana being Suvarna, Madhu and Gritha is best described as :-

.... स्वर्णप्राशनं हयेतन्मेधाग्निबलवर्धनम् ।(Ka.su)^[2]

Bala can ideally be corelated with Immunity. Suvarna has proven immunomodulatory effect by improving the non-specific /generalized immunity. After 10 consecutive days of administration, it has been proved that Suvarna has effect on cell mediated immunity.

Suwarna has direct effect on Ojus/Bala. It is Agnivivardana (improves metabolism) and in a Pharmaco-clinical study on neonates - shows significant effect on immunity, by a rise in serum IgG levels.^[5]

c) Mode of Action of Lehana

Intake of medicine by an infant through licking ensures that it stays in the oral mucosa for a longer time, thereby enhancing the sublingual and mucosal absorption of medicine.^[10] It directly enters to the systemic circulation through the ventral surface of tongue and floor of the mouth.^[10] A portion of drug is absorbed through the sublingual blood vessels bypasses the first pass metabolism giving acceptable bioavailability.^[10] Since most of the Lehana yogas are ghrita based it will increase the *Prakritasleshma* (which is Bala) in children and is *Agnivivardhana*, thus improves all metabolic process and inturn immunity. Madhu and ghrita enhance the bioavailability of different medicinal drugs used in lehana and help to reach the target sites in short interval of time.^[7]

d) Role of Lehana in Longevity

Factors influencing the longevity are - Genetics, prenatal and childhood conditions, education, socio-economic status, lifestyle and advances in medical technology (antibiotics and immunizations).^[9] Genetic factors play a relevant role in the attainment of longevity because they are involved in cell maintenance systems, including immune system. Strong correlation between the decline of immune system and a decrease in future life span, longevity can be corelated with optimal functioning of clonotypic and natural immunity.^[9] Ojus/bala is considered as प्राणायतनमुत्तमम्^[4] (seats of life), which is very essential for improving longevity. Defense against infectious agents is secured through combination of anatomical and physiological barriers and the components of immune system, so a highly efficient immune system is essential in infants for the developmental foundation to an adult life. Hence the significance of Lehana in infants is आयुष्य.

CONCLUSION

Newborn faces a complete set of immunological demands for -Protection against infection, avoidance of harmful inflammatory immune responses, balancing the transition from sterile intra uterine environment to a world rich in foreign agents. Innate, adaptive immunity and ojus are in dormant state leading the infant susceptible to broad spectrum diseases, there by necessitating the supplementation of highly potent immunomodulator in infancy such as

Lehana. All lehana dravyas are aimed to stimulate and strengthen body's immunity/ vyadikshamatwa/ ojus which will results in Deerghayu (longevity) of the child. Lehana takes care of physical, mental and immunological facets of the infant, so that he can live a happy & healthy future life.

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