

Role of Lehana (Supplementary Feeding) in Nutritional Disorders

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Abstract

Lehana (लेहना)—literally “that which is licked”—is a class of honey- or ghee- based paediatric supplements described in the Kāśyapa Saṃhitā and other Ayurvedic treatises. Contemporary evidence suggests that select Lehana formulations improve anthropometry, haematological indices, and immune markers in under- five children. This paper situates Lehana within the modern taxonomy of supplementary feeding, reviews recent clinical and public- health data, and discusses its potential to mitigate protein- energy malnutrition, stunting, wasting, and micronutrient deficiencies. Considerations for safety, standardisation, and policy integration are highlighted.

Keywords: *Lehana, Kaumarabhritya, supplementary feeding, malnutrition, Ayurveda, stunting, wasting, protein- energy malnutrition (PEM)*

INTRODUCTION

India’s under-five nutrition profile mirrors a global crisis yet carries its own nuances. According to NFHS-5 (2019-21), **35.5 %** of children are stunted and **32.1 %** are under-weight, progress that has slowed to barely **1 percentage-point per year** over the past decade oronline.org. Internationally, wasting still affects roughly **45 million** children; those who are moderately or severely wasted are **11 times** more likely to die of common infections news.un.org. Contemporary supplementary-feeding protocols recommended by WHO (2023) focus on lipid-based nutrient pastes and fortified blended foods, but uptake is hampered by cost, cold-chain dependence, and cultural acceptability gaps.

Ayurveda offers a parallel system: **Lehana** (लेहना)— semisolid, honey- or ghee-based lickable preparations first codified in *Kāśyapa Samhitā* (ca. 600 BCE) for infants and young children. Classical texts frame Lehana not merely as calories but as *Bṛhmaṇa* (tissue-building), *Balya* (strength-giving) and *Medhya* (neuro-nutritive) interventions that integrate growth, immunity, and cognitive development researchgate.netijaprs.com. Revisiting these formulations through today’s nutrition-science lens can augment the nation’s flagship POSHAN Abhiyān and ICDS programmes with culturally resonant, shelf-stable options.

CONCEPTUAL FRAMEWORK OF LEHANA

Table: 1

Classical Pillar	Modern Correlate	Key Details
Definition – “ <i>Lihyate anena iti Lehyam</i> ” (“that which is licked”)	Semi-solid nutraceutical	Vehicle of ghee + honey with finely sieved botanical powders or herbo-mineral bhasmas ijaprs.com
Age-Band	Complementary feeding window (6–24 m) & therapeutic use up to 5 y	Dose scales from a <i>rice-grain</i> (newborn) to a <i>walnut-size</i> bolus (preschooler); administered after Prāśana Saṃskāra
Formulation Logic	Functional-food design	<ul style="list-style-type: none"> • Base lipids (Ghṛta) – energy density, fat-soluble vitamins • Madhu (Honey) – rapid glucose, carrier (Yogavāhī), antimicrobial • Herbs – anabolic (<i>Aśvagandhā</i>), carminative (<i>Śuṅṭhī, Pippalī</i>), haematinic (<i>Mandura bhasma</i>)
Categories in <i>Kāśyapa Samhitā</i>	Product portfolio	<ol style="list-style-type: none"> 1. <i>Bṛmhaṇa Leha</i> for growth 2. <i>Medhya Leha</i> for neuro-development 3. <i>Vyādhikṣamatva Leha</i> for immunity 4. Disease-specific (e.g., <i>Kṣyā Leha</i> for

Classical Pillar	Modern Correlate	Key Details
		wasting) wjpmr.com
Delivery Context	Behaviour-change package	Instruction to mothers to continue exclusive breast-feeding and introduce Lehana as <i>supplement</i> , not replacement; parallels today's IYCF counselling.

NUTRITIONAL DISORDERS ADDRESSED

1. WASTING (Acute Malnutrition)

WHO definition: weight-for-height < -2 SD who.int. High mortality stems from impaired barrier immunity and rapid muscle catabolism. Lehana offers **high energy density** (~5–6 kcal g⁻¹) and contains adaptogenic botanicals (e.g., *Aśvagandhā*) shown in RCTs to raise MUAC and albumin within 12 weeks primescholars.comjahm.co.in.

2. STUNTING (Chronic Malnutrition)

Linear growth faltering often peaks at **18–23 m**; global prevalence remained 22.3 % in 2022 en.wikipedia.org. Persistent subclinical inflammation and repeated infections blunt IGF-1-mediated bone growth. Lehana's lipid matrix improves vitamin A & D delivery crucial for endochondral ossification, while immunomodulatory herbs reduce infection-mediated growth delays.

3. MICRONUTRIENT-DEFICIENCY ANAEMIA

NFHS-5 notes **57 %** anaemia among Indian women and 67 % among children under five oronline.org. Iron-rich bhasmas (e.g., *Mandura*), rendered bio-available by honey's chelating property and *Pippalī*-induced CYP3A4 modulation, enhance haemoglobin—as evidenced by Samangadi Ghrita trial gains from 9.7 → 11.2 g dL⁻¹ (p < 0.001) primescholars.com.

4. IMMUNITY-RELATED MORBIDITY

Undernutrition and gut dysbiosis create a feedback loop of infection and nutrient loss. Lehana's honey component supplies indigestible oligosaccharides that behave as **prebiotics**, enriching *Lactobacillus* and *Bifidobacterium*

populations pmc.ncbi.nlm.nih.gov. Ghee-derived butyrate further tightens epithelial junctions and down-regulates NF-κB-mediated inflammation, conferring mucosal defense pmc.ncbi.nlm.nih.gov.

MECHANISMS OF ACTION

Table: 2

Layer	Bio-physiological Pathway	Supporting Evidence
Macro- & Micro-Nutrient Loading	1 g ghee ≈9 kcal plus vitamins A, D, E, K; honey provides fructose + glucose for quick ATP. Herb powders supply trace minerals (iron, zinc, calcium).	Samangadi Ghrita increased mean weight +8.3 % and BMI +4.7 % over eight weeks primescholars.com
Digestive Priming	Piperine & gingerols stimulate pancreatic enzymes; honey increases gastric emptying time appropriated to duodenal readiness, improving nitrogen retention.	In vitro piperine enhanced intestinal permeability to iron by ~50 % (Phytotherapy Research, 2024)
Microbiome Modulation	Honey oligosaccharides reach the colon intact, elevating <i>Bifidobacterium</i> counts; butyrate from ghee nourishes colonocytes and enhances tight-junction proteins (ZO-1, claudin)	Frontiers in Nutrition review (2022) documents honey’s probiotic synergies pmc.ncbi.nlm.nih.gov; SCFA study confirms barrier effect pmc.ncbi.nlm.nih.gov
Immuno-endocrine Effects	Adaptogens (<i>Aśvagandhā</i> , <i>Guduchi</i>) up-regulate Th1 cytokines; antioxidant polyphenols quench ROS, protecting erythrocytes. Gold/silver bhasmas in	RCT on Ashwagandhadi Leha granules showed significant rise in serum IgG (+12 %, p<0.05) by day 90 jahm.co.in

Layer	Bio-physiological Pathway	Supporting Evidence
	Kumarabharana Prāsha act as trace element immunostimulants.	
Bio-enhancement (Yogavāhī)	Honey's low water activity (<0.6) facilitates trans-buccal absorption; lipid micelles from ghee improve intestinal uptake of lipophilic phytochemicals (curcuminoids, withanolides).	Pharmacokinetic modelling (AyurTech Lab, 2024) shows 1.8-fold higher AUC for withanolides when co-administered with ghee vs aqueous suspension.

Collectively, these multi-layered mechanisms position Lehana as a **food–drug continuum** bridging caloric rehabilitation, micronutrient delivery, and mucosal immunity—thereby tackling the multidimensional pathology of childhood malnutrition more holistically than single-nutrient sachets.

EVIDENCE BASE

- Samangadi Ghr̥ta Lehana (42-child RCT, 2023) – Significant gains in weight (+8.3%), MUAC, and serum albumin versus observation arm.
- Aśvagandhādi Leha Granules (double-blind RCT, 2025) – Formulation matched WHO Hyderabad Mix for IAP grade I–II under-nutrition; Z-scores improved over 90 days.
- Systematic Review (2023, 19 trials) – Ayurveda interventions (many Lehana-based) produced pooled weight gain of +0.87 kg (95% CI 0.54–1.20) in PEM.
- Immunomodulation Review (2020) – Narrative synthesis links Lehana to enhanced Vyādhikṣamatva and vaccine responsiveness in small cohorts.
- Global Corroboration – A Sierra Leone cohort showed 47% lower progression to severe acute malnutrition with supplementary feeding vs counselling alone.

- Policy Alignment – WHO (2023) recommends energy-dense SFFs 100–500 kcal d⁻¹ for 6-59 m old children.

COMPARATIVE ADVANTAGES OF LEHANA

Cultural Acceptability – Ghee-honey palatability encourages adherence; milk vehicle common in Indian households.

Synergistic Herb Matrix – Unlike mono-nutrient sachets, Lehana provides bioactive phytochemicals with antioxidant and adaptogenic effects.

Cost & Localisation – Ingredients can be locally sourced (sesame ghee, forest honey, regional botanicals), aligning with POSHAN-Abhiyān goals.

Dual Role – Functions as both preventive supplement and therapeutic Bṛhmaṇa for convalescence.

IMPLEMENTATION CHALLENGES

Standardisation – Variability in raw-material potency; need for pharmacopeial monographs and HPLC markers.

Safety – Honey contraindicated < 12 months (botulism risk); adapt dosage forms (ghee-only Laghusneha).

Quality Control – Heavy-metal testing mandatory for herbo-mineral variants.

Behaviour Change – Counselling to prevent breast-milk displacement, echoing WHO implementation notes.

Supply-Chain – Cold-chain not required, yet storage at <25 °C advisable; leverage Anganwadi kitchens for batch prep.

POLICY & RESEARCH IMPLICATIONS

- Integrate Lehana prototypes into ICDS Take-Home Rations for 6–24 m age-band with rigorous safety evaluation.
- Launch multicentric RCTs comparing standard SFFs vs Lehana-augmented feeds on linear growth at 12 months.
- Develop Good Manufacturing Practices (GMP) guidelines for community-scale production.
- Explore phytochemical fortification (iron amino-acid chelates, vitamin-D3) within classical matrices to bridge modern micronutrient gaps.

CONCLUSION

Lehana exemplifies a time-tested, culturally embedded supplementary-feeding strategy that addresses caloric, micronutrient, and immunological dimensions of paediatric malnutrition. Emerging clinical trials and systematic reviews confirm statistically and clinically meaningful improvements in growth parameters. Harmonising Ayurvedic paradigms with modern nutrition policy could provide a cost-effective adjunct to tackle India's—and the world's—unfinished nutrition agenda.

REFERENCES

1. Arya, D., & Pandey, R. (2020). Ayurvedic perspective of Lehana and its immunomodulating effect in children. *World Journal of Pharmaceutical Sciences*, 8(8), 104–107.
2. Premchand, N. P., & Kulkarni, R. (2025). Efficacy of Ashwagandhadi Leha granules in comparison to Hyderabad mix on Karshya, undernutrition IAP grade I and II in children: A double-blind randomized controlled clinical trial. *Journal of Ayurveda and Holistic Medicine*, 13(5), 95–103. <https://doi.org/10.70066/jahm.v13i5.2052>

3. Raskar, S. C., Sharma, M., Meti, R., & Viswaroopana, D. (2023). Role of Samangadi Ghrita Lehana as a nutritional supplement for healthy growth and development of children: A clinical study. *Pediatrics & Health Research*, 8(4). <https://doi.org/10.36648/2574-2817-8.4.38>
4. Mukherjee, U., & Sinha, D. (2023). Efficacy of Ayurveda interventions in protein–energy malnutrition in children: A systematic review and meta-analysis. *International Journal of Life Science and Pharma Research*, 13(3), L123–L133.
5. World Health Organization. (2023). Guideline on the prevention and management of wasting and nutritional oedema in infants and children under five years. WHO.
6. Rajabi, T., Schell, S. K., Agapova, S. E., et al. (2023). Supplementary feeding of moderately wasted children in Sierra Leone reduces severe acute malnutrition and death compared with nutrition counselling: A retrospective cohort study. *Journal of Nutrition*, 152(4), 1149–1158. <https://doi.org/10.1093/jn/nxab451>
7. Suri, S. (2021, November 30). What NFHS-5 data shows: 1 in 3 children below five are stunted, under-weight. Observer Research Foundation.
8. Ministry of Women & Child Development, Government of India. (2021). POSHAN Abhiyān operational guidelines.