

MUKKUDI AS AHARA-AUSHADHA: CONTEXTUAL THERAPEUTIC USE AND PHYSIOLOGICAL RELEVANCE IN INTEGRATIVE HEALTHCARE

¹Dr.Sajithra.T.Sasi, ²Dr.Pradeep.K
¹Final year PG Scholar, ²Associate Professor
^{1,2}Department of Kriyashareera ,
^{1,2}Government Ayurveda College, Kannur, Kerala, India

Abstract

Mukkudi is a traditional Ayurvedic formulation widely practised in Kerala, exemplifying the Ayurvedic principle of *Ahara as Aushadha* (diet as therapy). Although not explicitly described in the major classical Ayurvedic treatises, *Mukkudi* is extensively documented in regional compendia such as *Sahasrayogam*, *Arogyarakshakalpadruma*, *Chikitsamanjari*, etc. It is classified as a *Pramatya kalpana* under both *Kwatha* and *Anna kalpana* and is primarily indicated for gastrointestinal and metabolic disorders. It is prepared predominantly using *Takra* (buttermilk) and herbs possessing *Deepana–Pachana*, *Vatanulomana*, and *Grahi* properties, *Mukkudi* is therapeutically applied in postnatal care for *Agni deepana*, *Vata shamana*, and systemic recovery, in paediatric practice for conditions such as *Grahani*, *Atisara*, and *Krimi*, and in ritual contexts as a medicated *prasada*, notably *Nelluvai Mukkudi*. Physiologically, *Mukkudi* supports digestion, regulates *Dosha* balance, enhances metabolic function, facilitates neuro-hormonal balance in the postpartum period, and contributes to gut microbiota modulation through the probiotic effects of buttermilk. More than 40 formulations are described across regional texts, targeting disorders including *Jwara*, *Pandu*, *Arshas*, *Atisara*, and *Grahani*. This review aims to highlight *Mukkudi* as a scientifically relevant traditional dietary formulation, emphasizing its therapeutic rationale, physiological mechanisms, and potential role in contemporary integrative healthcare. Contemporary insights into gut health and microbiome science further support its relevance in integrative healthcare, underscoring the need for systematic pharmacological and clinical validation to enable its broader therapeutic application.

Keywords: *Mukkudi*, *Takra* , *Deepana*, *Pachana*, gastro intestinal disorders

Introduction

Mukkudi is a traditional Ayurvedic formulation particularly prominent in South Indian households and Ayurvedic practice. It is used both as food and medicine, exemplifying the Ayurvedic principle of diet as therapy. This formulation belongs to the *Upakalpana* of *Kwatha Kalpana (Pramatya Kalpana)* and is also categorized under *Annavarga* as *Khala Kalpana*.^[1] The term *Mukkudi* refers to a semi-solid or paste-like herbal preparation that consists of a combination of freshly ground herbs used in the treatment of various diseases. It is composed primarily of buttermilk and digestive-stimulating herbs. Though the term *Mukkudi* does not appear in classical Ayurvedic texts, its formulations and applications are mentioned in various regional texts including *Sahasrayogam*, *Arogyarakshakalpadruma*, *Navakhandam*, *Chikitsamanjari*, etc. *Mukkudi*, as prepared by traditional Keraleeya Vaidyas, is based on the principles of *Pramatya Kalpana*. It is prominently utilized in the management of digestive disorders such as *grahani*, *agnimandhya* and *ama* related conditions and is known for its *Deepana-pachana*, *Vata anulomana* and *Shola prashamana* properties. *Mukkudi* holds significance not only in classical gastrointestinal therapeutics but also resonates with modern perspectives on gut health, microbiome balance and metabolic regulation.

Materials and methods

Primary data were systematically collected through an extensive textual review of both classical and regional Ayurvedic literature to document the conceptual framework, formulation patterns, therapeutic indications, and traditional usage of *Mukkudi*. Regional Ayurvedic compendia specific to Kerala, including *Arogyaraksha Kalpadrumam*, *Keraleeya Oushadha Vijnanam*, *Yogamritam*, *Chikitsa Manjari*, *Navakhandam*, and *Sahasrayogam*, were critically examined to identify various *Mukkudi* formulations, ingredients, methods of preparation, dosage forms, and clinical indications. In addition, classical Ayurvedic treatises such as *Ashtanga Hridaya* and *Sarangadhara Samhita* were consulted to establish the foundational theoretical basis of *Takra Kalpana*, *Kwatha Kalpana*, *Pramatya Kalpana*, and the pharmacodynamic principles of *Deepana-Pachana*, *Grahi karma*, and *Vatanulomana*, which underpin the therapeutic rationale of *Mukkudi*.

Secondary data were sourced from peer-reviewed scientific journals, ethnomedicinal surveys, pharmacological studies, and review articles retrieved from recognized online databases. These sources were analyzed to correlate traditional Ayurvedic claims with contemporary scientific evidence related to digestive physiology, metabolic regulation, gut microbiota modulation, probiotic activity of buttermilk, and neuro-hormonal adaptations, particularly in postnatal contexts. The collected literature was analyzed and synthesized to present an integrative understanding of *Mukkudi* as an *Ahara-Aushadha* formulation, bridging classical Ayurvedic wisdom with modern biomedical perspectives.

Review results

Method of preparation:

In Navakhandam, the term *Khala* is also used to denote *Mukkudi*, however, it represents a form of *Yusha Kalpana*. 4 *Kazhanju* (20 gm) drug is initially boiled in 1 *nazhi* (360 ml) of *Takram*. The boiled drugs are finely ground and reintroduced into the same *Takram*. This mixture is then boiled until the volume is reduced to one-fourth, yielding the final semi-solid preparation known as *Mukkudi*.^[2]

Properties:

Depending upon the ingredients of *Mukkudi yogas* their properties may vary, the general property of *Takra*^[3] is given in Table 1. Though *Takra* is considered as a *Tridoshahara dravya*, when used with combination of different drugs, its *Doshahara* properties are enhanced.^[4]

Table 1: Properties of Takra

<i>Rasa</i>	<i>Amla</i>
<i>Anurasa</i>	<i>Madhura, Kashaya</i>
<i>Guna</i>	<i>Laghu, Ruksha</i>
<i>Veerya</i>	<i>Ushna</i>
<i>Vipaka</i>	<i>Madhura</i>
<i>Dosha karma</i>	<i>Tridoshahara</i>
<i>Karma</i>	<i>Srothoshodhana, Deepana, Balya, Grahi, Varnya, Hridya</i>

Application of *mukkudi* yogas:

1. In Post-natal care

Mukkudi is a traditional medicinal preparation employed in *Sūtikā Paricaraṇa* practices of North Kerala, where it functions as both food and medicine during the immediate postpartum period. It is primarily administered as an appetizer in the early postnatal phase, particularly during the second to third weeks following delivery. *Mukkudi* is traditionally indicated for *Dīpana-Pācana*, *Garbhaśaya Śodhana*, *Vātānulomana*, *Vraṇa Ropana*, *Vedanā Sthāpana*, *Stanya Janana*, and for facilitating proper lochial discharge.

Additionally, it is considered beneficial in maintaining women's health through the regulation of the menstrual cycle. Postnatal Mukkudi formulations commonly include ingredients such as *Jiraka*, *Hingu*, *Śatapushpā*, *Trikaṭu*, *Ajāmodā*, and *Pālaṇḍu*, which predominantly possess *tīkṣṇa*, *uṣṇa*, *kaṭu*, and *laghu guṇas*. These properties contribute to *Kapha-Vāta Śamana*, enhancement of *Agni* (digestive fire), and support the restoration of health in postnatal women.^[5]

2. In Paediatrics

In *Arogyakalpadruma*, several *Mukkudi yogas* are described, the majority of which are indicated for the management of gastrointestinal disorders. These formulations are highlighted as specialties of *Keraleeya Bāla Cikitsā*, and include preparations such as *Pāṭādi Mukkudi*, *Ārdrakādi Mukkudi*, *Ajāmodādi Mukkudi*, *Punarnavādi Mukkudi*, *Dīpyakādi Mukkudi*, *Amṛtādi Mukkudi*, and *Sūraṇādi Mukkudi*, etc.^[6]

3. As Oushadha prasada (medicated offering)

Nelluvai Mukkudi is a unique preparation offered as *prasāda* after the morning *pūjā* during the Malayalam month of *Karkidaka* (mid-July to mid-August) at Śrī Dhanvantari Temple, Nelluvai, in the Thrissur district of Kerala. Traditionally, it is believed that the consumption of this *prasāda* on an empty stomach, with sincere devotion, contributes to the alleviation of various ailments, particularly gastrointestinal disorders.^[7] Ingredients of *Nelluvai mukkudi* is given in Table 2.

Table 2: Ingredients of *Nelluvai mukkudi*

Sl.No.	Local name	Botanical name	Part used
1.	<i>Neela koduveli</i>	<i>Plumbago auriculata Lam.</i>	Root
2.	<i>Chukku</i>	<i>Zingiber officinale Rose.</i>	Dried Rhizome
3.	<i>Kurumulaku</i>	<i>Piper nigrum L.</i>	Fruit
4.	<i>Thippali</i>	<i>Piper longum L.</i>	Fruit
5.	<i>Jeeraka</i>	<i>Cuminum cyminum L.</i>	Seed

Physiological aspect

1. In Agni and Digestion

By *Deepana* property, it stimulates *Jatharagni* by increasing the secretion of digestive juices in the stomach and intestines.

2. In Dosha Regulation

By *ushna* and *Tikshna* *gunas*, it pacifies *Vata* and *Kapha* without increasing *pitta* and enhances peristalsis and motility by its *Sara guna*

3. Role in metabolism and Immunity

By enhancing *agni*, it helps to restore *Dhatwagni* leading to better nutrition, immunity and tissue regeneration. It supports immune modulation by maintaining gut health.

4. In neurological and hormonal axis

In postnatal care, it regulates *Apana Vata* and promote better neuro-hormonal balance, aiding recovery and lactation.

5. Grahi and Fluid balance

By its *grahi* action, it helps to retain nutrients by increasing intestinal absorption and reducing fluid loss.

6. Microbiome Modulation

Takra in *Mukkudi* resembles a traditional probiotic by introducing live cultures of *Lactobacillus* and *Bifidobacterium* species. It also stimulates short-chain fatty acid (SCFA) production, reinforcing gut barrier integrity and reducing intestinal inflammation.

Clinical aspects

Mukkudi exhibits broad clinical utility across a wide range of disorders, as evidenced by its diverse indications in regional Ayurvedic texts such as *Arogyaraksha Kalpadruma*, *Keraliya Aushadha Vijnana*, *Yogamritam*, and *Chikitsamanjari*. More than 40 *Mukkudi* formulations are described for conditions including

Arshas, Atisara, Grahani, Agnimandhya, Shoola, Krimi, Pandu, Visarpa, Jwara, Mutrakrichra, and Asthisrava. These formulations harness *Deepana-Pachana, Grahi, Vatanulomana, and Shoolahara* actions, allowing *Mukkudi* to be applied effectively in gastrointestinal disorders, inflammatory conditions, metabolic disturbances, and paediatric ailments. This wide spectrum of clinical indications highlights *Mukkudi*'s therapeutic versatility and its established role in traditional Kerala Ayurvedic practice. *Mukkudi yogas* mentioned in *Arogyaraksha kalpa druma*^[8] is given in Table 3. In *Keraliya Aushadha Vijnana*^[9], around 12 *mukkudi yogas* are mentioned which is given in Table 4. *Mukkudi yogas* mentioned in *Yogamritam*^[10] and *Chikitsa Manjari*^[11] is given in Table 5 and Table 6 respectively.

Table 3: *Mukkudi yogas* in *Arogyaraksha kalpa druma*

Sl.No	<i>Mukkudi Yogas</i>	Indications
1.	<i>Ajamojadhi</i>	<i>Arshas, Pandu</i>
2.	<i>Amruthadhi</i>	<i>Visarpa</i>
3.	<i>Amlavetasadhi</i>	<i>Visarpa</i>
4.	<i>Ardrakadhi</i>	<i>Arshas</i>
5.	<i>Deepyakadhi</i>	<i>Atisara, Arshas, Grahani, Shoola, Anaha, Agnimandhya</i>
6.	<i>Patadhi</i>	<i>Arshas</i>
7.	<i>Paranthipushpadhi</i>	<i>Visarpa</i>
8.	<i>Punarnavadhi</i>	<i>Arshas</i>
9.	<i>Sooranadhi</i>	<i>Krimi</i>
10.	<i>Vrishcheevamooladhi</i>	<i>Visarpa</i>

Table 4: *Mukkudi yogas* in *Keraliya Aushadha Vijnana*

Sl.No	<i>Mukkudi Yogas</i>	Indications
1.	<i>Ashwathadhi</i>	<i>Jwara</i>
2.	<i>Aviltholadhi</i>	<i>Arshas</i>
3.	<i>Changeri khala</i>	<i>Atisara</i>
4.	<i>Chiruvilwadhi</i>	<i>Malabandha</i>
5.	<i>Chitrakadhi khala</i>	<i>Pandu</i>
6.	<i>Karanjatwagadhi</i>	<i>Atisara</i>
7.	<i>Meenangani</i>	<i>Asthisrava</i>
8.	<i>Pippali pallava</i>	<i>Jwara</i>
9.	<i>Vasukadhi</i>	<i>Mootakrichra</i>
10.	<i>Vattapatradhi</i>	<i>Shoolam</i>
11.	<i>Vibeethakyadhi</i>	<i>Shoolam</i>
12.	<i>Viraku pafanadhi</i>	<i>Shoolam</i>

Table 5: *Mukkudi yogas* in *Yogamritam*

Sl.No	Mukkudi Yogas	Indications
1.	<i>Ardrakadhi</i>	<i>Agnimandhya</i>
2.	<i>Aviltholadhi</i>	<i>Arshas</i>
3.	<i>Changeri</i>	<i>Atisara</i>
4.	<i>Chundakka</i>	<i>Kasa</i>
5.	<i>Kadukka</i>	<i>Grahani</i>
6.	<i>Kakamachyadhi</i>	<i>Kamala</i>
7.	<i>Maanthilir</i>	<i>Arochaka</i>
8.	<i>Mandooradhi</i>	<i>Pandu</i>
9.	<i>Neeraraladhi</i>	<i>Asthisrava</i>
10.	<i>Patadhi khala</i>	<i>Masurika</i>

Table 6: Mukkudi yogas in Chikitsa manjari

Sl.No	Mukkudi Yogas	Indications
1.	<i>Chundaver</i>	<i>Grahani</i>
2.	<i>Chundakka</i>	<i>Vatakaphaja kasa</i>
3.	<i>Pippala pallava</i>	<i>Vishama jwara</i>
4.	<i>Tiladeepyakadhi khala</i>	<i>Pandu</i>
5.	<i>Thaarthavaladhi</i>	<i>Mutrakrichra</i>
6.	<i>Varanadhi</i>	<i>Ashmari</i>

Discussion

The above findings suggest that *Mukkudi* represents a convergence of nutritional and therapeutic domains, aligning with the Ayurvedic tenet of *Ahara as Aushadha* (food as medicine). Its applicability extends beyond classical disease management to encompass contemporary pathophysiological frameworks, highlighting its integrative potential in both traditional and modern healthcare contexts.

1. Integrative approach to Gut health

Modern biomedical literature increasingly recognizes the central role of gut microbiota in immune function, metabolic regulation, and even neuro-hormonal balance. By virtue of its *Takra* base, *Mukkudi* contributes to the maintenance of gut microbiota balance and short-chain fatty acid (SCFA) generation, facilitating mucosal integrity and exerting anti-inflammatory effects. This supports its use in disorders like *Grahani*, *Atisara*, and *Agnimandhya* which now correspond to conditions of dysbiosis and leaky gut in biomedicine.

2. Postpartum utility and Hormonal modulation

The application of *Mukkudi* in *Sutika Paricharya* is particularly noteworthy. The herbal combinations often rich in *Tikshna* and *Ushna* properties aid in restoring uterine tone, clearing lochia, initiating lactation, and pacifying Vata derangement.

3. Grahi karma and Metabolic restoration

The *Grahi* and *Deepana-Pachana* actions of *Mukkudi* contribute to nutrient retention, improved intestinal absorption, and reduced inflammation. This suggests that *Mukkudi* not only treats symptoms such as diarrhoea and abdominal bloating but also plays a corrective role in malabsorption syndromes and metabolic fatigue.

4. Therapeutic flexibility and Local adaptation

One of the most striking features observed in the study of *Mukkudi* is its therapeutic versatility and regional customization, reflecting the adaptability of Kerala's traditional Ayurvedic practices to local needs, resources, and disease patterns. The large variety of *Mukkudi yogas* found across texts such as *Arogyaraksha Kalpadruma*, *Yogamritam*, *Chikitsamanjari*, and *Keraliya Aushadha Vijnana* demonstrates that local physicians tailored formulations based on the availability of herbs in different agro-climatic zones, seasonal prevalence of disorders (e.g., *Karkidaka Chikitsa*), *Sanskrita Bala Chikitsa* (regional paediatric disease profiles), Postpartum protocols specific to Kerala, etc.

5. Scope for future research

While traditional and textual data validate its efficacy, clinical trials and pharmacological analyses are necessary to establish its mechanism of action in scientific terms. Systematic evaluation of its effects on gut microbiota composition, inflammatory biomarkers, and metabolic parameters under controlled conditions may significantly enhance its credibility and integration into evidence-based healthcare systems.

Clinical significance

Its base ingredient, *Takra*, serves not only as a carrier of *Deepana–Pachana* herbs but also contributes to gut microbiota modulation, aligning with contemporary biomedical insights on digestive and immune health. The versatility in its formulation based on regional pharmacognosy, seasonal disorders, and specific physiological needs illustrates Ayurveda's capacity to evolve with context while maintaining its foundational principles.

The ritualistic and cultural embedding of *Mukkudi* in community practices, such as the *Nelluvai prasada*, further amplifies its significance beyond the clinical, enhancing acceptance and adherence among patients. From a physiological perspective, its ability to restore *Agni*, pacify *doshas*, enhance absorption, and promote neuro-hormonal balance, particularly in the postpartum period, underscores its holistic utility.

Conclusion

Mukkudi represents a distinctive convergence of nutrition and therapeutics, reflecting the Ayurvedic tenet of *Ahara as Aushadha* (food as medicine). Originating from Kerala's rich regional Ayurvedic tradition, it demonstrates notable therapeutic flexibility, with over 40 documented formulations customized for varied clinical indications, including gastrointestinal disorders, metabolic imbalances, postnatal recovery, and paediatric care.

Given the growing scientific interest in the gut-brain-immune axis and the therapeutic potential of diet-based interventions, *Mukkudi* holds immense promise for integrative medicine. Future research focusing on its pharmacodynamics, microbiota interaction, and clinical efficacy will be crucial for validating and expanding its role in modern health systems.

Reference

1. Ravindra Angadi. Sarangadhara Samhita. Delhi: Chaukambha Sanskrit Pratishtan Orientalia publishers; 2017.
2. Dhanwanthari Das, Narayana Moss. Navakhandom. Published under the Authority of the Government of His Highness the Maharaja of Travancore; 1939. 19–23 p.
3. 'Murthy SrikanthaKR. ASHTANGA HRDAYAM. 10th ed. Vol. 1. Varanasi: Chowkamba Krishnadas Academy; 2014.
4. Review Article ROLE OF TAKRA (AYURVEDIC PROBIOTIC) IN THE MANAGEMENT OF GASTROINTESTINAL DISORDERS Sourabh Gupta [Internet]. Available from: <http://ijraps.in>
5. Rose PB, Patel AK, Asha KV. Mukkudi-a polyherbal combination of drugs used in traditional postnatal care in north Kerala, India. Journal of Traditional and Folk Practices. 2021 Dec 1;9(1 & 2). (1).
6. Dr.Lal Krishna. Arogya Raksha Kalpadrumah. 3rd ed. Varanasi: Chowkamba Sanskrit series office, Varanasi; 2019.
7. Nair TG, Navas M, Akhilraj AR, Mohan S, Sruthy R, Raghi RG, et al. Case studies-Part VIII: Systematic documentation of traditional knowledge Journal of Traditional and Folk Practices Case studies-Part VIII: Systematic documentation of traditional knowledge related to plants used for food and medicine [Internet]. Available from: <http://jtfp.jntbgri.res.in>
8. Kaikulangara Rama Wariyar. Arogyakalpadrumam. 6th ed. Thrissur: Sulabha Printers; 2002.

9. Dr. Vishwas Mehta, Prof.(Dr.)C.Retnakaran, Prof.(Dr.)K.Sankaran, editors. Keraleeya Oushadha Vijnanam. 1st ed. Vol. 1. Kerala: Kerala state Audio - visual and Reprographic centre; 2009.
10. D.Sreeman Namboothiri. Yogamrutham. 7th ed. Alappuzha: Vidyarambam publishers; 2021.
11. D.Sreeman Namboothiri. Chikitsamanjari. 14th ed. Alappuzha: Vidyarambham Publishers; 2019.