ISSN: 2322 - 0902 (P)
ISSN: 2322 - 0910 (O)

International Journal of Ayurveda and Pharma Research

Review Article

PATIENT-CENTRIC AYURVEDA: TRANSLATIONAL STRATEGIES FOR PALATABLE DOSAGE FORMS TO OPTIMIZE THERAPEUTIC OUTCOMES

Dharaben Makwana[1]*, Shreyas G Bhalodia[2], Payal Joshi[3]

*[1]Associate Professor, Shalakya Tantra Department, Monark Ayurveda Medical College and Hospital, Ahmedabad, Gujarat

[2]Principal, Head of Department & Professor, Shalya Tantra Department, Global Institute of Ayurveda College and Hospital, Rajkot, Gujarat

[3]Ayurveda Consultant & Researcher, Jishan Herbal, Rajkot, Gujarat, India.

Article info

Article History:
Received: 19-05-2026
Accepted: 20-06-2026
Published: 19-07-2026

KEYWORDS:
Ayurveda, Herbal Drug Delivery, Palatability, Patient Compliance, Pediatric Formulations.

ABSTRACT

Ayurveda, the traditional system of medicine, emphasizes individualized treatment based on *Prakriti* (constitution), *Agni* (digestive and metabolic capacity), *Satmya* (adaptability) and *Roga-Rogi Bala* (disease and patient strength), which also extend to formulation acceptability. However, patient compliance remains a critical challenge in contemporary practice, particularly significant in pediatric and preventive healthcare settings, where acceptability directly influences adherence due to the unpalatable nature of classical dosage forms such as *Kwatha* (decoction), *Churna* (powder), and *Asava-Arishta* (fermented preparations). **Aim and Objective:** The present review aims to critically analyze the concept of palatability in Ayurveda and its impact on therapeutic outcomes. **Method**: A systematic exploration of classical texts and contemporary research was undertaken to understand the role of *Rasa* (taste), *Anupana* (vehicle), and drug delivery systems in enhancing patient acceptability. Findings suggest that improving palatability and convenience significantly enhances adherence, thereby optimizing therapeutic efficacy. The concept of patient-centric Ayurveda is thus redefined through a translational lens, bridging traditional knowledge with modern innovation. **Conclusion**: The development of palatable dosage forms represents a necessary evolution of patient-centric Ayurveda. Integrating classical principles with contemporary science pharmaceutical innovations can significantly improve compliance, particularly in pediatric populations, thereby optimizing therapeutic outcomes and promoting global acceptance of Ayurvedic interventions.

INTRODUCTION

Ayurveda, the ancient science of life is fundamentally based on the principle of individualized therapeutics, wherein treatment is tailored according to *Prakriti* (constitution), *Agni* (digestive and metabolic capacity), *Satmya* (adaptability) and *Roga-Rogi Bala* (disease and patient strength).[1,2,3] These parameters not only guide the selection of therapeutic agents but also influence the suitability and acceptability of dosage forms. The classical texts emphasize that the success of treatment depends not merely on drug selection but also on its proper administration in a form that is compatible with the patient's physiological and psychological state.

In Ayurvedic pharmaceutics (*Bheshajya Kalpana*), a wide range of dosage forms such as *Kwatha* (decoction), *Churna* (powder), *Vati* (tablets) and *Asava-Arishta* (fermented preparations) have been described to ensure therapeutic efficacy and adaptability.[4] However, despite their proven clinical effectiveness, many of these formulations are often associated with poor palatability, unpleasant taste and inconvenience in administration. These factors significantly affect patient compliance, particularly in vulnerable groups such as pediatric and geriatric populations, where sensory acceptability plays a crucial role in treatment adherence.

Access this article online

Quick Response Code

https://doi.org/10.47070/ijapr.v14i7.4148

Ayurveda inherently acknowledges the importance of *Rasa* (taste) not only as a sensory attribute but also as a therapeutic determinant influencing *Dosha* balance and drug action. [5] Similarly, the concept of *Anupana* (vehicle) is employed to enhance drug palatability, bioavailability and therapeutic targeting. These classical principles reflect an early understanding of patient-centric drug delivery, emphasizing that medicines should be both effective and acceptable to the patient. Furthermore, the concept of *Satmya* highlights the need for adaptation of formulations according to individual tolerance and habitual compatibility, which directly correlates with long-term compliance. [6]

In contemporary healthcare, patient compliance has emerged as a critical determinant of therapeutic success, with non-adherence leading to suboptimal outcomes and increased disease burden. [7] This issue becomes more pronounced in preventive healthcare and chronic disease management, where prolonged medication use is required. In this context, the integration of modern pharmaceutical approaches such as taste masking, novel drug delivery systems and dosage form redesign offers significant potential to enhance acceptability without compromising efficacy.

Despite the availability of such technologies, their systematic application within the framework of Ayurveda remains limited. There exists a critical need to reinterpret classical concepts through a translational lens, bridging traditional knowledge with contemporary pharmaceutical innovations. Developing palatable, convenient and patient-friendly dosage forms while preserving the classical integrity of formulations can significantly improve adherence and therapeutic outcomes.

Therefore, this review aims to critically analyze the concept of palatability in Ayurveda, explore classical foundations supporting formulation acceptability and propose translational strategies for the development of innovative dosage forms aligned with patient-centric principles.

MATERIALS AND METHODS

This review was designed as a narrative and integrative analysis of classical Ayurvedic literature and contemporary scientific evidence to explore the concept of palatability and patient-centric dosage form design.

Data Sources

Classical Ayurvedic texts including *Bruhatayi, Laghutrayi* and other classical books were systematically reviewed to extract references related to *Rasa* (taste), *Anupana* (vehicle), *Satmya* (adaptability) and principles of *Bheshajya Kalpana* (Ayurvedic pharmaceutics). These sources provided the foundational framework for understanding formulation acceptability and therapeutic administration.

In addition, electronic databases such as PubMed, Scopus, and Google Scholar were searched to identify relevant contemporary literature on patient compliance, palatability, taste masking and novel drug delivery systems.

Review of Literature

Classical Concept of Palatability in Ayurveda

Ayurveda provides a comprehensive understanding of drug acceptability through the concept of *Rasa* (taste), which is not merely a sensory attribute but a fundamental determinant of pharmacological action. The six types of *Rasa Madhura* (sweet), *Amla* (sour), *Lavana* (salty), *Katu* (pungent), *Tikta* (bitter), and *Kashaya* (astringent) play a significant role in influencing *Dosha* balance and therapeutic outcomes.[8] Classical texts emphasize that the perception of taste directly affects the patient's willingness to consume medicine, thereby indirectly influencing treatment success.

In addition to *Rasa*, the concept of *Anupana* (vehicle) is crucial in enhancing both palatability and drug efficacy. Appropriate selection of *Anupana*, such as *Madhu* (honey), *Ghrita* (clarified butter), or *Jala* (water), not only improves taste but also facilitates better absorption and targeted drug delivery.[9] This reflects an early understanding of adjuvant therapy, where the vehicle modifies the pharmacokinetic and pharmacodynamic properties of the drug.

The principle of *Satmya* (adaptability or habituation) further highlights the importance of patient-specific acceptability. Drugs and formulations that are compatible with an individual's habitual intake are more likely to be accepted and tolerated, leading to improved compliance.[10] Thus, Ayurveda inherently supports the concept of personalization not only in drug selection but also in formulation design.

Ayurvedic Dosage Forms and Challenges in Compliance

The science of *Bheshaja Kalpana* (Ayurvedic pharmaceutics) describes a wide variety of dosage forms designed to optimize therapeutic efficacy. Common formulations include *Kwatha* (decoction), *Churna* (powder), *Vati* (tablets), *Avaleha* (semi-solid preparations) and *Asava-Arishta* (fermented formulations).[11] These dosage forms are developed based on factors such as drug solubility, stability and intended therapeutic action.

Despite their effectiveness, many classical formulations present challenges in terms of palatability, preparation time and convenience. For instance, *Kwatha* often has a bitter taste and requires time-consuming preparation, which may reduce patient adherence in modern lifestyles. Similarly,

Churna may be difficult to ingest due to its texture and taste, especially in pediatric and geriatric populations.

Classical texts acknowledge these limitations and suggest modifications through *Anupana* and alternative forms. However, these adaptations are often underutilized in current practice. As a result, there exists a gap between classical recommendations and real-world patient compliance, necessitating innovative approaches to dosage form design.

Pediatric Considerations in Ayurvedic Therapeutics

Pediatric patients represent a unique group where palatability becomes a critical determinant of therapeutic success. Ayurveda recognizes this through specialized branches such as *Kaumarbhritya*, which emphasize gentle, acceptable and safe therapeutic approaches for children. The administration of medicines in children often requires modification in dosage form, taste and method of delivery to ensure compliance.

Classical practices include mixing medicines with palatable substances such as *Madhu* (honey) or *Ghrita* to improve acceptability.[12] This aligns with the concept of *Satmya*, ensuring that formulations are compatible with the child's preferences and digestive capacity. However, many traditional dosage forms remain unsuitable for pediatric use without modification, particularly those with strong bitter or pungent tastes.

In modern healthcare, pediatric compliance is recognized as a major challenge, with taste being one of the primary factors influencing adherence. Therefore, integrating Ayurvedic principles with modern pediatric formulation strategies is essential to improve treatment outcomes in this population.

Modern Perspective on Palatability and Patient Compliance

Patient compliance is a well-established determinant of therapeutic success in contemporary medicine. Poor adherence can lead to treatment failure, disease progression and increased healthcare costs. Factors influencing compliance include taste, dosage form, frequency of administration and convenience.

Modern pharmaceutics has developed various techniques to address palatability issues, including taste masking, flavoring, coating and the development of novel drug delivery systems such as dispersible tablets, syrups, and effervescent formulations.[13] These approaches aim to enhance patient acceptability without altering the therapeutic properties of the drug.

From a translational perspective, these technologies can be adapted to Ayurvedic formulations to overcome limitations associated with classical dosage forms. For example, bitter herbal extracts can be incorporated into flavored syrups or gummies, while powders can be converted into granules or tablets with improved texture and taste.

Need for Translational Integration in Ayurveda

Although Ayurveda inherently incorporates patient-centric principles, their application in modern practice requires reinterpretation and innovation. The concept of translational research provides a framework for bridging classical knowledge with contemporary scientific advancements.

By integrating principles such as *Rasa*, *Anupana* and *Satmya* with modern pharmaceutical technologies, it is possible to design dosage forms that are both therapeutically effective and patient-friendly.[14] This approach not only enhances compliance but also facilitates the global acceptance of Ayurveda by aligning it with current healthcare expectations.

Furthermore, the development of palatable dosage forms is particularly relevant in preventive healthcare, where long-term adherence is essential. Patient-centric innovation in this area can significantly improve the effectiveness of Ayurvedic interventions and expand their applicability in diverse populations.

Critical Analysis and Translational Strategies

Limitations of Conventional Ayurvedic Dosage Forms

Classical Ayurvedic formulations are therapeutically rich and pharmaceutically diverse; however, their practical acceptability in modern healthcare settings remains a significant concern. Dosage forms such as *Kwatha* (decoction), *Churna* (powder), and *Asava-Arishta* (fermented preparations) are often associated with strong bitterness, unpleasant odor, bulky administration and complex preparation procedures.[15] These sensory and practical limitations reduce patient willingness to continue therapy for prolonged durations.

The challenge becomes more prominent in pediatric, geriatric and preventive healthcare settings where long-term adherence is essential. Children are particularly sensitive to bitter taste and coarse textures, while geriatric patients may experience difficulty in swallowing powders or consuming large volumes of liquid preparations.[16] Consequently, poor compliance may compromise therapeutic outcomes despite the pharmacological efficacy of the medicine.

Translational Relevance of Classical Ayurvedic Principles

The concept of translational medicine aims to bridge traditional knowledge with contemporary scientific application. Ayurveda already contains several foundational principles that support patient-centric pharmaceutical innovation.

The concept of *Rasa* (taste) extends beyond sensory perception and directly influences therapeutic action and patient acceptance. *Madhura Rasa* (sweet taste), for example, is naturally preferred in pediatric formulations and can be strategically utilized for improving compliance.[17] Similarly, *Anupana* serves as a natural bioenhancer and taste-modifying adjunct, reflecting principles comparable to modern pharmaceutical excipients and delivery enhancers.[18]

The principle of *Satmya* (adaptability) is particularly relevant in chronic and preventive care, where repeated administration of medicine is necessary. A formulation compatible with the patient's habitual preferences is more likely to ensure sustained adherence. This aligns closely with modern concepts of personalized medicine and patient-centered drug design.

Thus, reinterpretation of these classical concepts through a translational framework provides scientific justification for the development of innovative dosage forms while preserving Ayurvedic authenticity.

Innovative Strategies for Palatable Dosage Form Development

Modern pharmaceutical technologies offer multiple opportunities to redesign classical Ayurvedic formulations into more acceptable and convenient dosage forms.

Taste Masking Approaches: Taste masking is one of the most important strategies for improving palatability. Bitter herbal extracts can be modified using like natural sweeteners, flavoring agents, polymer coating, microencapsulation and lipid-based masking techniques.[19] These approaches can reduce bitterness without significantly altering pharmacodynamic activity.

Granules and Dispersible Formulations: Conversion of *Churna* into granules or dispersible powders improves flowability, dosing accuracy, portability and patient convenience.[20] Effervescent granules may further enhance acceptability by improving mouthfeel and ease of administration.

Herbal Gummies and Chocolate-Based Matrices: Herbal gummies represent an emerging patient-friendly dosage form, especially suitable for pediatric use. Similarly, medicated chocolate matrices may serve as carriers for bitter herbal extracts while improving sensory acceptance.[21] However, such innovations should be carefully standardized to avoid excessive sugar content or alteration of therapeutic properties.

Flavored Syrups and Suspensions

Liquid formulations remain highly acceptable in children and elderly populations. Standardized herbal syrups with appropriate preservatives and flavoring systems can improve adherence while maintaining dosage flexibility.[22]

Fast-Dissolving and Chewable Tablets: Fast-dissolving tablets and chewable dosage forms provide convenience, rapid disintegration, and improved patient experience.[23] Such formulations may be particularly useful in preventive healthcare and long-term supplementation therapies.

Balancing Innovation with Classical Integrity

One of the major concerns regarding pharmaceutical modification in Ayurveda is the potential loss of classical identity and therapeutic authenticity. Excessive commercialization or inappropriate alteration of formulations may compromise fundamental Ayurvedic principles.

Therefore, innovation should not merely focus on market acceptability but must remain rooted in classical rationale. Selection of excipients, preservatives, sweeteners and processing techniques should be guided by Ayurvedic compatibility and safety considerations.

Standardization, stability assessment, pharmacodynamic evaluation and clinical validation are essential before introducing modified dosage forms into routine therapeutic practice. Translational innovation should thus function as an extension of classical wisdom rather than its replacement.

DISCUSSION

The development of palatable Ayurvedic dosage forms presents several scientific and regulatory challenges despite its significant therapeutic potential. One of the primary concerns is preserving the classical integrity and therapeutic efficacy of formulations during pharmaceutical modification. Ayurvedic formulations are traditionally based on principles such as *Rasa* (taste), *Guna* (properties), *Virya* (potency), *Vipaka* (post-digestive effect) and excessive alteration in formulation characteristics may influence their therapeutic action.

Selection of suitable excipients and taste-masking agents is another major challenge. Many synthetic additives commonly used in modern pharmaceutics may not align with Ayurvedic principles of compatibility and safety. Therefore, the use of natural, safe, and Ayurvedically acceptable excipients becomes essential in developing patient-friendly formulations. Standardization of raw materials, manufacturing procedures, and stability assessment also remain critical concerns due to variations in herbal sources and processing methods.

Modified dosage forms such as flavored syrups, gummies, and herbal chocolate matrices may possess increased susceptibility to microbial contamination and reduced shelf stability. Hence, proper preservation strategies, quality control measures, and stability studies are necessary before their large-scale

therapeutic application. Additionally, advanced pharmaceutical technologies may increase production costs, potentially limiting accessibility in low-resource healthcare settings.

From a regulatory perspective, innovative Ayurvedic formulations must comply with established standards related to Good Manufacturing Practices (GMP), quality assurance, safety evaluation and pharmacovigilance. Scientific validation through preclinical and clinical studies is essential to establish therapeutic equivalence, patient compliance, and safety of modified dosage forms. Regulatory frameworks should support evidence-based innovation while ensuring preservation of classical Ayurvedic principles and authenticity.

The future scope of patient-centric Ayurveda is highly promising. Integration of modern drug delivery technologies with classical Ayurvedic pharmaceutics can facilitate the development of more acceptable, effective, and globally adaptable formulations. Pediatric and geriatric healthcare particularly offer significant opportunities for innovation through chewable tablets, dispersible formulations, flavored suspensions, and medicated gummies. Furthermore, personalized dosage form design based on *Prakriti* (constitution) and patient preference may strengthen the individualized therapeutic approach of Ayurveda.

Thus, translational innovation in dosage form development has the potential to improve patient compliance, optimize therapeutic outcomes, and promote the wider global acceptance of Ayurveda while maintaining its classical foundation.

CONCLUSION

Ayurveda inherently supports a patient-centric therapeutic approach through principles such as *Prakriti* (constitution), *Satmya* (adaptability), *Rasa* (taste) and *Anupana* (vehicle), which influence both drug acceptability and therapeutic efficacy. Poor palatability and inconvenience associated with several classical dosage forms often reduce patient compliance, especially in pediatric, geriatric and preventive healthcare. The present review emphasizes that integrating classical Ayurvedic principles with modern pharmaceutical technologies can improve formulation acceptability without compromising therapeutic integrity. Approaches such as taste masking, flavored formulations, dispersible tablets, granules and herbal gummies demonstrate promising potential in enhancing adherence and patient experience. Therefore, evidence-based translational innovation in Ayurvedic dosage design may strengthen therapeutic outcomes, global acceptance and the contemporary relevance of Ayurveda in healthcare practice.

REFERENCES

1. Verma S, Kumar B, Kumari S, Sharma BK. A review on concept of Prakriti and its importance in Ayurveda. Int J Ayu Pharm Chem. 2021; 15(3): 45-52.
2. Patel MA, Patki PM, Kala K. Comprehensive review of Agni physiology: Ayurvedic perspectives and modern correlations. J Ayurveda Naturopathy. 2025; 2(2): 35-39. doi:10.33545/ayurveda.2025.v2.i2.A.28.
3. Biswas N, Mohan P, Hirulal M. Dasha Vidha Pariksha: classical insights into Roga and Rogi assessment. EPRA Int J Multidiscip Res. 2025; 11(4): 112-118. doi:10.36713/epra23753
4. Mehta AK, Sharma R. Ayurvedic Pharmacy Bhaishajya-Kalpana. 1st ed. New Delhi; Chaukhambha Sanskrit Pratisthan; 2005. p. 114-120
5. Sharma RK, Bhagwan Dash. Caraka Samhita (Eng. Translation) Vol. II (Kalpasthana, Chp. I–IV). Varanasi; Chaukhamba Sanskrit Series Office; 2003. p. 25-40.
6. Chinke CD, Takale SM, Upadhyay RS. Concept of Satmya-Asatmya in Ayurveda. Eur J Biomed Pharm Sci. 2021; 8(12): 95-98.
7. Jimmy B, Jose J. Patient medication adherence: measures in daily practice. Oman Med J. 2011;26(3):155-159.
8. Singhal GD. Susrutasamhita Vol. I (Sutrasthana, Chp. 42, Sloka 3,4). Delhi; Chaukhamba Sanskrit Pratishtahan; 2007. p. 380-382.
9. Sharma RK, Bhagwan Dash. Caraka Samhita (Eng. Translation) Vol. I (Sutrasthana, Chp. 5, Sloka 12–13). Varanasi; Chaukhamba Sanskrit Series Office; 2002. p. 95-96
10. Singhal GD. Susrutasamhita Vol. I (Sutrasthana, Chp. 35, Sloka 10,11). Delhi; Chaukhamba Sanskrit Pratishtahan; 2007. p. 320-322.
11. Tripathi B. Sangadhara Saṃhia (Eng. Translation) Vol. I (Madhyama Khanda, Chp. I, Sloka 1–5). Varanasi; Chaukhamba Surbharati Prakashan; 2006. p. 25-30.
12. Sharma A, Patil VC. Dosage forms in Kashyap Samhita: pediatric perspectives in Ayurveda. International Journal of Research and Analytical Reviews. 2024; 11(2): 210-215.
13. Rathbone MJ, Hadgraft J, Roberts MS. Modified-release drug delivery technology. 2nd ed. New York: Informa Healthcare; 2008. p. 1-10.
14. Sharma RK, Bhagwan Dash. Caraka Samhita (Eng. Translation) Vol. I (Sutrasthana, Chp. 26, Sloka 42–43). Varanasi; Chaukhamba Sanskrit Series Office; 2002. p. 145-147.

15. Tripathi B. Sarngadhara Saṃhita (Eng. Translation) Vol. I (Madhyama Khanda, Chp. 6, Śloka 10). Varanasi; Chaukhamba Surbharati Prakashan; 2006. p. 30-35.
16. Mohammed Dhaifallah HS. Taste masking of a certain bitter drugs. International Journal of Pharmaceutical Sciences. 2023; 3(6): 487-495.
17. Singhal GD. Susrutasamhita Vol. II (Cikitsa, Chp. I, Sloka 13). Delhi; Chaukhamba Sanskrit Pratishtahan; 2007. p. 429-435.
18. Singhal GD. Susrutasamhita Vol. I (Sutrasthana, Chp. 46, Sloka 5–6). Delhi; Chaukhamba Sanskrit Pratishtahan; 2007. p. 410-412.
19. Mohammed Dhaifallah HS. Taste masking of a certain bitter drugs. International Journal of Pharmaceutical Sciences. 2023; 3(6): 487-495.
20. Sharma A, Patil VC. The comprehensive guide to Ayurvedic granules medicine: benefits, preparation, and clinical uses. Journal of Ayurvedic Pharmaceutics. April 2026; 12(2): 55-63.
21. Karande VN, Kale S, Pawar T. A critical review of herbal-infused chocolate: health benefits and nutritional value. Journal of Herbal Drug Delivery. 2025; 8(1): 22-30.
22. Extemporaneous Formulations for Pediatric, Geriatric and Special Populations. iHRIS Health Journal. 2026; 14(3): 210-218.
23. Bhumija Lifesciences. Vitamin B12 chewable fast-dissolve tablets: formulation and patient acceptability. Nutraceuticals & Wellness Review. 2025; 9(2): 88-92.

Cite this article as:
Dharaben Makwana, Shreyas G Bhalodia, Payal Joshi. Patient-Centric Ayurveda: Translational Strategies for Palatable Dosage Forms to Optimize Therapeutic Outcomes. International Journal of Ayurveda and Pharma Research. 2026;14(7):72-77.
https://doi.org/10.47070/ijapr.v14i7.4148
Source of support: Nil, Conflict of interest: None Declared

***Address for correspondence**
Dr. Dharaben Makwana
Associate Professor,
Shalakya Tantra Department,
Monark Ayurveda Medical College and hospital, Ahmedabad, Gujarat.
Email: dharapatelddd@gmail.com