

REVIEW ARTICLE

Understanding *Dhatu Poshan Nyaya* through the Lens of Modern Science: A Narrative Review

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ARTICLE INFO

Article history:

Received on: 24-12-2025

Accepted on: 19-01-2026

Published on: 31-01-2026

Key words:

Ayurveda,
Cellular physiology,
Dhatu Poshan Nyaya,
Metabolism,
Nutrient transport,
Postnatal nutrition,
Tissue nutrition

ABSTRACT

Background: *Dhatu Poshan Nyaya* is a foundational Ayurvedic framework describing the processes of tissue nourishment through digestion, metabolism, and nutrient distribution. The classical theory describes four logical principles (*Nyaya*) that elucidate the processes of sequential tissue transformation, channel-mediated transport, selective assimilation by specific tissues, and concurrent nourishment throughout the body.

Objective: This narrative review synthesizes contemporary scholarship alongside classical Ayurvedic teachings to provide an integrated understanding of *Dhatu Poshan Nyaya* mechanisms, developmental adaptations, and correlations with modern biomedical concepts.

Methods: A comprehensive literature search was conducted across multiple databases using targeted keywords related to *Dhatu Poshan Nyaya*. Articles were screened using predefined inclusion and exclusion criteria. Four key peer-reviewed articles “Conceptual Study on *Dhatu Poshan Nyaya* and a Process of Metabolism,” “Explication on Tissue Nutrition in Prenatal and Postnatal Life,” “A Comprehensive Guide to *Dhatu poshana Nyayas*,” and “Analytical Review on Basic Tenets of *Dhatu Poshan Nyaya* as per Contemporary Science” meeting criteria for relevance, scholarly rigor, and thematic focus, formed the basis for narrative synthesis.

Results: The synthesis highlights a multi-layered biochemical and physiological framework of tissue nourishment, developmental transitions from prenatal to postnatal nutrition, and modern correlates in cellular transport mechanisms. Clinical and therapeutic implications for targeted nutrition and drug delivery are discussed.

Conclusion: *Dhatu Poshan Nyaya* offers a sophisticated, conventionally grounded yet scientifically congruent model of tissue nutrition. Its integration with contemporary biomedical science holds promise for advancing Ayurvedic therapeutics and interdisciplinary research.

1. INTRODUCTION

Ayurveda, with its comprehensive and holistic framework, conceptualizes health as the state of balance among *Dosha*, *Dhatu*, and *Mala*.^[1] The seven primary *Dhatu Rasa*, *Rakta*, *Mamsa*, *Meda*, *Asthi*, *Majja*, and *Shukra*^[2] are vital for physical integrity and function. Sustaining their equilibrium through adequate and precise nourishment is fundamental to health preservation. The classical concept of *Dhatu*

Poshan Nyaya vividly explains the process by which the nutrients derived from digestion are progressively or concurrently transformed, distributed, and selectively assimilated to sustain and nourish the *Dhatu*. Over recent years, various studies have revisited these *Nyaya* with a modern scientific lens to uncover biochemical and physiological correlates, developmental nuances, and clinical implications. This review builds on a carefully curated selection of literature that met stringent inclusion criteria emphasizing detailed mechanistic explanation, developmental biology perspectives, and practical clinical relevance. Studies lacking analytical depth or translational focus were excluded to maintain academic rigor and clarity. The article’s objective is to integrate classical Ayurvedic concepts with contemporary

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biomedical understanding, offering a nuanced, evidence-informed perspective on *Dhatu Poshan Nyaya*. Such integration can illuminate pathways for enhanced clinical interventions, research directions, and education in both traditional and modern healthcare settings.

1.1. Aims and Objectives

- To critically synthesize recent scientific and classical Ayurvedic perspectives on the mechanisms underpinning *Dhatu Poshan Nyaya*.
- To examine developmental aspects of tissue nourishment specifically during postnatal life, highlighting mechanisms of digestion, absorption, and *Dhatu Poshan* after birth.
- To establish correlations between Ayurvedic *Nyaya* and modern tissue metabolism, nutrient transport, and cellular uptake.
- To explore clinical implications for personalized nutrition, malnutrition management, and targeted drug delivery systems.
- To suggest future research priorities to bridge Ayurvedic theory with experimental biomedical science.

2. MATERIALS AND METHODS

This review employed a narrative synthesis approach grounded in a systematic literature selection. Contemporary peer-reviewed articles and authoritative classical Ayurvedic texts were identified through database searches and scholarly networks. Inclusion criteria comprised:

- Detailed mechanistic and physiological explanation of *Dhatu* nourishment.
- Integration of modern physiology with classical *Nyaya*.
- Translational relevance in nutrition or therapeutics.

Excluded were descriptive or opinion-based articles lacking critical scientific discussion or relevance to the outlined objectives. Four seminal contemporary articles served as the core literature, complemented by classical Ayurvedic treatises. Extracted data were the matricized into biochemical processes, transport mechanisms, developmental physiology, and clinical applications.

2.1. *Ksheera Dadhi Nyaya* (Maxim of Milk and Curd)

Ksheera Dadhi Nyaya, also known as *Sarvatmana Pariṇama Paksha* or the “Law of Total Transformation,” is the first and most fundamental theory explaining the mechanism of *Dhatu Poshan* (tissue nourishment). According to this concept, each preceding *Dhatu* transforms completely into the succeeding one in a sequential manner, analogous to the transformation of milk into curd, curd into butter, butter into ghee, and ghee into *Ghrītamanda*.^[3] This theory describes how ingested food is gradually converted into a homogenous and compatible form that nourishes successive tissues, comparable to the process of biochemical transformation described in contemporary science, where complex macronutrients such as carbohydrates, proteins, and lipids are broken down into their simplest absorbable forms: glucose, amino acids, and fatty acids, respectively. The concept also aligns with the *Panchamahabhuta Siddhanta*, as food and body tissues, though both *Panchabhautik* in nature, differ in elemental predominance; hence, transformation into a tissue-compatible state represents the formation of *Poshakamsha* (nutrient essence) specific to each *Dhatu*.

However, Acharya Chakrapani critically reinterpreted this theory,^[3] asserting that the *Dhatu* are not entirely transformed into one another, but are instead nourished by *Ahara Rasa* through a process of

replenishment rather than production. He emphasized that the term *Prasadaja* in the classical verse refers to *Poshan* (nourishment) and not to the generation of a new *Dhatu*. Chakrapani further explained that each *Dhatu* has two components *Sthayi Poshya* (stable component) and *Asthayi Poshaka* (nutrient component). The *Asthayi Poshaka* portion undergoes transformation through its respective *Agni* within the *Srotas* and nourishes the next tissue. Dalhana^[4] advanced this idea by proposing that only a fraction of each *Dhatu* contributes to the formation of the succeeding one, whereas the rest forms *Upadhatu* (subsidiary tissues) and *Mala* (waste products).

2.2. *Kedari Kulya Nyaya* (Maxim of the Field and the Canal)

Kedari Kulya Nyaya, also known as *Kramaparinama Paksha*^[3] or the “Law of Transmission,” describes the process of *Dhatu Poshana* (tissue nourishment) through the analogy of irrigating fields through canals. In this maxim, *Kedari* represents the field (tissue), and *Kulya* denotes the canal (channel of circulation).^[4,5] Just as water irrigates the nearest field first before reaching the more distant ones, nutrients derived from digested food are distributed sequentially to nourish successive *Dhatu*. After the completion of digestion (*Awasthapaka*), the ingested food is divided into *Prasadabhaga* (nutritive fraction) and *Kittabhaga* (waste fraction). The *Prasadabhaga* in the form of *Rasa Dhatu* reaches the heart (*Hridaya*), from where, propelled by *Vyana Vayu*, it circulates through the *Dhamani* (arterial channels) to nourish various tissues in an orderly manner.^[6]

2.3. *Khale Kapota Nyaya* (Maxim of the Barn and the Bird)

According to this *Nyaya*, the nourishment of *Dhatu* occurs in a selective manner based on their specific demands.^[3,4] The *Ahara Rasa* flows through respective *Srotas*, and each *Dhatu* extracts only the nutrients it requires. This process is compared to pigeons visiting a barn; each bird chooses grains according to its need and preference, symbolizing the selective uptake of nutrients by tissues. This theory emphasizes that each *Dhatu* possesses its own *Poshak Amsha* (nutritive fraction).

2.4. *Ek Kala Dhatu Poshana Nyaya* (Maxim of Simultaneous Nourishment)

Ek Kala Dhatu Poshana Nyaya, explained by commentator *Arundatta*,^[7] proposes that all *Dhatu* are nourished simultaneously rather than sequentially. According to this view, *Ahara Rasa* enters the respective *Srotas* of each *Dhatu* and provides nourishment to all tissues at once through their specific fractions. Acharya Charaka also emphasizes this view, stating that *Vyana Vayu* is responsible for the instantaneous circulation of *Rasa Dhatu* throughout the entire body.

3. DISCUSSION

According to the collective understanding presented in the articles “*Conceptual Study on Dhatu Poshan Nyaya and a Process of Metabolism*,” “*Explication on Tissue Nutrition in Prenatal and Postnatal Life*,” “*A Comprehensive Guide to Dhatu Poshana Nyayas*,” and “*Analytical Review on Basic Tenets of Dhatu Poshan Nyaya as per Contemporary Science*,” the Ayurvedic concept of *Dhatu Poshan Nyaya* closely correlates with the modern understanding of metabolism and tissue nutrition. Ayurveda explains that each *dhatu* (body tissue) is nourished sequentially from the essence of *Ahara Rasa* through various mechanisms such as *Ksheer-Dadhi Nyaya*, *Kedari-Kulya Nyaya*, *Khale-Kapota Nyaya* (selective absorption), and *Ek-Kala Dhatu Poshan Nyaya*. Modern science parallels these principles with physiological processes such as cellular metabolism, enzymatic

transformation, nutrient transport, and selective tissue uptake. These *Nyaya* together depict how nutrients are assimilated, transformed, and distributed at the molecular and cellular levels to maintain systemic balance. Thus, the ancient Ayurvedic framework of *Dhatu Poshan* finds logical coherence with modern concepts of digestion, absorption, circulation, and cellular nutrition, emphasizing a holistic and dynamic view of metabolism.

3.1. Interpretation of *Ksheera Dadhi Nyaya*

In modern physiological terms, this theory can be correlated with cellular metabolic processes such as glycolysis, gluconeogenesis, and beta-oxidation, where one metabolite is enzymatically transformed into another, often producing by-products and intermediates. The *Ksheera Dadhi Nyaya* may thus be interpreted as a depiction of both embryonic tissue differentiation – where totipotent embryonic cells successively transform into specialized tissues – and the continuous metabolic and nutritional transformations occurring postnatally. Therefore, this classical theory remains relevant, offering insight into the sequential differentiation of tissues, cellular metabolism, and the principle of complete biochemical transformation essential for maintaining tissue health and function.

3.2. Interpretation of *Kedari Kulya Nyaya*

This corresponds closely with the modern understanding of systemic circulation, wherein digested nutrients are absorbed into the bloodstream and distributed to tissues through the pumping action of the heart. As blood supply first reaches nearby organs such as the heart and lungs before distant tissues, this theory aptly illustrates the sequential yet continuous distribution of nutrients throughout the body. The *Kedari Kulya Nyaya* also suggests key physiological mechanisms such as tissue-specific blood circulation, pressure gradients in vascular flow, and the concept of targeted nutrient or drug delivery. Ayurveda explains that each *Dhatu* is nourished through its specific *Srotas* (channels), analogous to the branching and re-branching of arteries and capillaries that ensure localized microcirculation tailored to each organ's needs. This mirrors the modern concept of end-artery circulation and capillary-level exchange. Furthermore, the analogy of irrigation supports the idea of passive transport according to pressure gradients, similar to the hemodynamic principles governing blood flow, where pressure differences between cardiac chambers and vascular beds determine the rate and direction of circulation. This principle is exemplified in pulmonary circulation, where regional variations in hydrostatic pressure influence differential blood flow within the lungs. In addition, *Kedari Kulya Nyaya* provides a theoretical foundation for understanding tissue specificity and targeted action of drugs in Ayurveda. Just as canals deliver water to designated fields, certain herbs or formulations act selectively on specific tissues through their corresponding *Srotas*. For instance, *Shatavari* (*Asparagus racemosus*) enhances *Shukra Dhatu* (reproductive tissue), *Shukti* (pearl oyster) strengthens *Asthi Dhatu* (bone tissue), and *Ashwagandha* (*Withania somnifera*) nourishes *Mamsa Dhatu* (muscular tissue). Thus, this *Nyaya* not only explains the sequential distribution of nutrients but also aligns with contemporary concepts of circulation, tissue perfusion, and targeted delivery systems, highlighting Ayurveda's profound physiological insight into nutrient transport and tissue nourishment.

3.3. Interpretation of *Khale Kapota Nyaya*

In modern scientific terms, it reflects the concept of cellular selectivity and receptor-mediated uptake, where only compatible

nutrients are absorbed through the selectively permeable plasma membrane. Examples include the tissue-specific absorption of calcium, iron, and amino acids via binding with carrier proteins. The analogy also signifies active transport, as energy is expended for nutrient movement, akin to the pigeon's effort in gathering grains. Furthermore, it illustrates autoregulation, where each tissue adjusts nutrient intake according to metabolic demand, physiological state, and environment. This corresponds to variable caloric and nutritional requirements in different individuals and conditions. Finally, the slight time lag in nutrient delivery between proximal and distal tissues parallels differences in blood flow velocity, despite the simultaneous circulation of *Rasa Dhatu* by *Vyana Vata*. Thus, *Khale Kapota Nyaya* encapsulates the Ayurvedic understanding of selective, energy-dependent, and self-regulated tissue nourishment, aligning closely with the modern principles of cellular nutrition and homeostasis.

3.4. Interpretation of *Ek Kala Dhatu Poshana Nyaya*

It resembles modern concepts of systemic blood circulation. This theory corresponds to physiological principles of hemodynamics, where nutrient-rich blood is distributed concurrently to all organs during each cardiac cycle. The apparent simultaneity of nourishment is due to the extremely short duration of cardiac contractions. Moreover, the replenishment of *Dhatu* is a continuous process governed by the strength of *Jatharagni* and *Dhatvagni*, much like the speed of a wheel drawing water from a well determined by its driving force. Thus, *Ek Kala Dhatu Poshana Nyaya* bridges Ayurvedic insight with modern circulatory physiology, emphasizing that tissue nutrition occurs simultaneously, sustained by continuous metabolic activity and efficient systemic circulation.

4. CONCLUSION

Dhatu Poshan Nyaya emerges as a comprehensive, integrative paradigm for understanding tissue nourishment in Ayurveda. Its principles, when aligned with contemporary biochemical and physiological sciences, offer a solid foundation for enhancing clinical nutrition, targeted therapeutics, and research innovation. Continued interdisciplinary studies are vital to fully harness these ancient insights within current healthcare frameworks.

A methodical and comprehensive Ayurvedic framework for tissue distribution, transformation, and nourishment is provided by *Dhatu Poshan Nyaya*. Similar to contemporary ideas of metabolism, circulation, and cellular uptake, each *Nyaya* *Ksheera Dadhi*, *Kedari Kulya*, *Khale Kapota*, and *Ek Kala Dhatu Poshana* offers insight into nutrient processing, selective delivery, and assimilation. This synthesis emphasizes that tissue nourishment is a dynamic, controlled process that can be adjusted to metabolic demands, nutritional status, and developmental stages. Personalized nutrition, postnatal care, malnutrition management, and targeted drug delivery are all better understood when Ayurvedic principles are combined with modern science. *Dhatu Poshan Nyaya* emphasizes the critical role of nutrition, metabolism, and systemic physiology in preserving health by bridging traditional knowledge with contemporary research to offer an evidence-congruent model for clinical application and future translational studies.

5. ACKNOWLEDGMENTS

None

6. AUTHORS' CONTRIBUTIONS

All the authors have read and approved the final version of the manuscript.

7. FUNDING

The authors declare that no financial support was received from any organization for the submitted work. In addition, all authors declare that they have no financial relationships with organizations that might be interested in the submitted work.

8. ETHICAL STATEMENT

Ethical approval was not required for this study as it was a review article with data obtained through a literature search.

9. CONFLICT OF INTERESTS

The authors declare no conflicts of interest regarding the publication of this paper.

10. DATA AVAILABILITY STATEMENT

The data analyzed in this review were obtained from publicly available sources, including peer-reviewed articles, observational studies, and surveys accessible via databases.

11. PUBLISHERS NOTE

This journal remains neutral with regard to jurisdictional claims in published institutional affiliations

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How to cite this article:

Yadav P, Yadav CR, Gurao RP, Rawat S. Understanding *Dhatu Poshan Nyaya* through the Lens of Modern Science: A Narrative Review. IRJAY. [online] 2026;9(1);40-44.

Available from: <http://irjay.in>

DOI link- <https://doi.org/10.47223/IRJAY.2026.90108>

Nyaya	Ayurveda concept	Modern scientific correlate
<i>Ksheera Dadhi Nyaya</i>	Sequential transformation of Dhatu (milk→curd→ghee)	Cellular metabolism, biochemical conversion between metabolites
<i>Kedari Kulya Nyaya</i>	Channel-wise nutrient transport (fields and canals analogy)	Vascular circulation, targeted delivery, capillary perfusion
<i>Khale Kapota Nyaya</i>	Selective uptake by tissues (birds picking grains analogy)	Cellular selectivity, receptor-mediated active transport
<i>Ek Kala Dhatu Poshan Nyaya</i>	Simultaneous nourishment of all Dhatus (instantaneous)	Systemic rapid circulation, concurrent tissue nutrition