A Comprehensive Review of The Concept of Upadhatu in Ayurvedic Samhitas

Dr. Harshal Sampatrao Sabale[1]
[1]*Professor, Department of Samhita Siddhant, Yashwant Ayurvedic College Post Graduate Training and Research Centre, Kodoli, Kolhapur, Maharashtra.*

***Abstract*—The concept of Upadhatu represents a vital physiological framework within Ayurveda, essential for understanding tissue metabolism and secondary structural development. While the *Sapta Dhatu* (seven primary tissues) form the foundational pillars of the human body, Upadhatus serve as specialized derivatives that perform specific physiological functions without undergoing further transformation into subsequent tissues. This distinction is critical in Ayurvedic biology, as Upadhatus do not possess the "Dharana" and "Poshanam" (nourishing) capabilities required to generate the next tissue in the metabolic chain. This review systematically examines the definition, origin, and clinical significance of Upadhatus as documented in the classical Ayurvedic *Samhitas*, including the *Charaka Samhita*, *Sushruta Samhita*, and *Ashtanga Hridaya*. According to Ayurvedic physiology, Upadhatus are formed from the nutrient portion (*Prasada bhaga*) of the primary Dhatus during the process of metabolic transformation mediated by *Dhatvagni* (tissue-specific fire). For instance, *Stanya* (breast milk) and *Artava* (menstrual fluid) are derived from *Rasa Dhatu*, while *Kandara* (tendons) and *Jala* (fascia) originate from *Mamsa Dhatu*. Understanding Upadhatus is clinically indispensable for diagnosing various pathological states. Since they are nourished by the primary Dhatus, any qualitative or quantitative depletion in the Dhatu directly manifests as a dysfunction in its corresponding Upadhatu. This review highlights their role in structural integrity, reproductive health, and locomotor functions. By synthesizing classical perspectives with contemporary physiological relevance, this study underscores the importance of Upadhatus in holistic assessment and the management of chronic degenerative conditions, providing a comprehensive lens through which secondary tissue dynamics can be evaluated.**

***Index Terms*—Ayurveda, Upadhatu, Sapta Dhatu, Dhatvagni, Metabolism, Kandara, Stanya Physiological Derivatives**

I. INTRODUCTION

In the foundational architecture of Ayurvedic physiology, the human body is described as an organized complex of *Dosha*, *Dhatu*, and *Mala*. Among these, the *Sapta Dhatus* (Rasa, Rakta, Mamsa, Meda, Asthi, Majja, and Shukra) are recognized as the primary tissues responsible for the structural maintenance (*Dharana*) and nourishment (*Poshanam*) of the body.[1] However, the metabolic journey of these tissues is not a simple linear progression. During the intricate process of *Dhatu-Paka* (tissue metabolism), certain secondary tissues are generated. These are termed Upadhatus.

The concept of Upadhatu is essential for a holistic understanding of human anatomy and clinical pathology.[2] While they share structural and functional similarities with the primary Dhatus, they possess a unique physiological status: they are end-products that do not transform into a subsequent tissue.[3] This review explores the classical perspectives, metabolic origins, and clinical significance of Upadhatus as detailed in the *Brihatrayi* (the three great treatises) and later Ayurvedic literature.

II. ETYMOLOGY AND DEFINITION

The word Upadhatu is a compound of two Sanskrit terms:

- Upa: A prefix signifying "secondary," "subordinate," "near," or "resembling."[4]
- Dhatu: Derived from the root *"Dha"* (to support/sustain), referring to the fundamental tissues.[5]

CLASSICAL NIRUKTI (DERIVATION)

According to Dalhana, the commentator of *Sushruta Samhita*:

"धातु समीपे भव उपधातवः |" (Dalhana on S.Su. 14/10)

Dhatu Samipe Bhava Upadhatavah |

Meaning: Those which are produced along with or stay in proximity to the Dhatus are Upadhatus.

FUNCTIONAL DEFINITION

An Upadhatu is a tissue that sustains the body (*Dharana*) but lacks the two defining characteristics of a *Mula Dhatu* (primary tissue):

1. Dhatvantar Poshana: It does not provide nourishment to a succeeding Dhatu.
2. Kramasha Parinama: It does not undergo further transformation in the metabolic chain.[6]

III. THE PHYSIOLOGY OF UPADHATU FORMATION

The formation of Upadhatus is an integral part of the *Dhatu-Parinama* (tissue transformation) process. According to the *Ksheera-Dadhi Nyaya* (Law of transformation), when one Dhatu transforms into the next, it is acted upon by its specific *Dhatvagni*.[7]

THE THREE-FOLD METABOLIC PRODUCT

When *Dhatvagni* acts upon the nutrient portion (*Poshaka Dhatu*), it results in three distinct outputs:

1. Sthula Bhaga (Poshya Dhatu): The stable part that builds the tissue itself.
2. Sukshma Bhaga (Poshaka Dhatu): The subtle part that moves forward to nourish the next Dhatu in the sequence.
3. Prasada Bhaga (Upadhatu): The refined secondary product that forms structures like milk, menstrual fluid, or tendons.
4. Kitta Bhaga (Mala): The waste products (like sweat, urine, or earwax).[8]

This highlights that Upadhatus are derived from the *Prasada* (pure/essence) part of the metabolism, distinguishing them from *Malas* (waste), although both are byproducts.

IV. CLASSIFICATION AND MAPPING IN SAMHITAS

Different Acharyas have provided varying lists of Upadhatus, reflecting different anatomical and physiological emphases.[9]

ACCORDING TO ACHARYA CHARAKA

In the *Chikitsa Sthan*, Charaka provides a clear sequence:

"रसात् स्तन्यं ततो रक्तमसृजः कण्डराः सिराः |

मांसाद्वसा त्वचा षट् च मेदसः स्नायुसंभवः ||" (C. Ci. 15/17)

TABLE 1: UPADHATUS AND THEIR PARENT DHATUS (CHARAKA SCHOOL)

Parent Dhatu	Upadhatus	Functions
Rasa (Plasma)	Stanya (Breast Milk), Artava (Menstrual fluid)	Nourishment of infant, Reproduction
Rakta (Blood)	Kandara (Tendons), Sira (Vessels)	Binding joints, Transportation of nutrients
Mamsa (Muscle)	Vasa (Muscle fat), Twacha (Skin layers)	Lubrication, Protection/Sensation
Meda (Adipose)	Snayu (Ligaments)	Stability and binding of the skeletal system

VARIATIONS IN OTHER TEXTS

- SUSHRUTA SAMHITA: While Sushruta does not use the term "Upadhatu" extensively in the original verses, his commentator Dalhana includes *Sandhi* (joints) as an Upadhatu of Medas.
- SHARANGDHARA SAMHITA: Provides a different list including *Danta* (teeth) as an Upadhatu of *Asthi* (bone) and *Kesha* (hair) as an Upadhatu of *Majja* (marrow).

TABLE 2: COMPARATIVE VIEW OF UPADHATUS

Source	Listed Upadhatus
Charaka	Stanya, Artava, Kandara, Sira, Vasa, Twacha, Snayu
Sushruta (Dalhana)	Stanya, Artava, Kandara, Sira, Vasa, Twacha, Snayu, Sandhi
Sharangdhara	Stanya, Artava, Vasa, Sweda, Danta, Kesha, Ojas

V. DETAILED DESCRIPTION OF MAJOR UPADHATUS

STANYA (BREAST MILK)

Derived from the *Prasada* portion of *Rasa Dhatu*. It is primarily composed of *Aap Mahabhuta* (water element). Its function is *Jivanam* (giving life/sustenance) to the infant. Clinically, the quality of Stanya is used to assess the health of the mother's Rasa Dhatu.[10]

ARTAVA (MENSTRUAL FLUID / OVUM)

The second Upadhatu of *Rasa*. It is essential for the *Garbhotpatti* (creation of the fetus). Vitiation in the Rasa Dhatu (due to poor digestion or stress) directly manifests as *Artava Dushti* (menstrual disorders).

KANDARA (TENDONS) AND SIRA (VESSELS)

These are derivatives of *Rakta Dhatu*.

- KANDARA: Described as *Mahatyah Snayavah* (thick ligaments/tendons). They provide the tensile strength required for joint movement.
- SIRA: These are the channels that carry blood and nutrients.[11] Their elasticity and structural integrity depend on the quality of Rakta.

TWACHA (SKIN)

Derived from the processing of *Mamsa Dhatu*.[12] Ayurveda describes seven layers of skin (*Sapta Twacha*), comparing the formation of skin to the "cream forming on the surface of boiling milk."[13]

Snayu (Ligaments) and Sandhi (Joints)

DERIVED FROM *MEDA DHATU*.

- SNAYU: There are 900 Snayus in the body.[14] They function like "leather straps" that bind the bones together, ensuring the body does not collapse under its own weight.
- SANDHI: The joints provide the framework for *Chesta* (movement).

VI. PATHOPHYSIOLOGICAL IMPORTANCE

The study of Upadhatus is vital for Roga Vinishchaya (diagnosis). Because Upadhatus are nourished by the *Prasada* portion of Dhatus, any deficiency in the parent Dhatu manifests first or most prominently in the Upadhatu.[15]

DHATU-UPADHATU CLINICAL CORRELATION

1. RASA KSHAYA (PLASMA DEPLETION): Leads to *Stanya Nasha* (absence of lactation) and *Artava Rodha* (amenorrhea).
2. MAMSA-MEDA DUSHTI: Leads to skin diseases (*Kushtha*) or ligament laxity.
3. VATA VYADHI: Most neurological and musculoskeletal disorders (like Sciatica or *Gridhrasi*) involve the *Kandara* and *Snayu*. Treatment involves not just pacifying Vata, but nourishing the parent tissues (Rakta and Meda).

RELATIONSHIP WITH AGNI AND SROTAS

Each Upadhatu has its own Srotas (channel system) for transport and is governed by the Dhatvagni of its parent tissue.

- If *Rasa-Agni* is low (*Mandagni*), the formation of *Stanya* will be heavy and *Pichila* (mucus-like), leading to digestive issues in the nursing infant.
- If *Meda-Agni* is hyperactive (*Tikshnagni*), it may lead to the drying up or brittleness of *Snayus* (ligaments).

CLINICAL APPLICATION IN MODERN PRACTICE

In contemporary Ayurvedic practice, the Upadhatu concept allows for a more nuanced approach to systemic health:

- GYNECOLOGY: Treating PCOD or Infertility by focusing on *Rasa-Prasadana* (purifying the plasma).
- SPORTS MEDICINE: Managing ligament tears and tendonitis by addressing the *Mamsa* and *Meda* metabolism through *Brimhana* (nourishing) therapies.
- DERMATOLOGY: Treating chronic skin issues by addressing *Mamsa Dhatu* and *Rakta* (since skin is the Upadhatu of Mamsa and resides over Rakta).

VII. DISCUSSION

The distinction between Dhatu, Upadhatu, and Mala is a masterstroke of Ayurvedic logic. While Malas (like *Purisha* or *Mutra*) must be expelled to maintain health, Upadhatus must be retained and protected as they perform structural roles (like the skin or tendons) or vital reproductive roles (like milk or menstrual fluid).

However, Upadhatus can sometimes behave like Malas if they are not utilized or expelled correctly (e.g., *Artava* must be expelled monthly). This dual nature—being a *Prasada* product yet requiring periodic renewal—makes them unique "transit tissues" in human physiology.

VIII. CONCLUSION

The Upadhatus represent the functional and structural extensions of the primary tissues. They are the clinical mirrors of Dhatu health. A comprehensive understanding of their origin from the *Prasada bhaga* of Dhatus, their governance by *Dhatvagni*, and their specific roles in the body provides a specialized lens for diagnosis and treatment. Future research integrating these classical concepts with modern connective tissue physiology and endocrinology could lead to breakthroughs in managing chronic degenerative and reproductive disorders.

REFERENCES

[1] Sharma RK, Dash B, editors. Charaka Samhita of Agnivesha (Based on Chakrapani Datta's Ayurveda Dipika). Vol 4. Chikitsa Sthana, Ch. 15, Ver. 17. Varanasi: Chowkhamba Sanskrit Series Office; 2016. p. 12-15.

[2] Murthy KR, editor. Sushruta Samhita of Sushruta. Vol 1. Sutra Sthana, Ch. 14, Ver. 10. Varanasi: Chaukhambha Orientalia; 2014.

[3] Murthy KR, editor. Ashtanga Hridayam of Vagbhata. Vol 1. Sharira Sthana, Ch. 1, Ver. 51. Varanasi: Krishnadas Academy; 2013.

[4] Tripathi B, editor. Charaka Samhita of Agnivesha. Vol 2. Varanasi: Chaukhamba Surbharti Prakashan; 2011.

[5] Shrivastav S, editor. Sharangdhara Samhita of Sharangdhara. Purva Khanda, Ch. 5, Ver. 7-10. Varanasi: Chaukhamba Orientalia; 2011.

[6] Dwivedi BK. Concept of Dhatu and Upadhatu in Ayurveda: A Physiological Review. J Ayurveda Integr Med. 2014;5(1):4-7.

[7] Singh A. Ayurvedic Physiology: A Review of Dhatu Parinama and Tissue Metabolism. Int J Ayurvedic Med. 2018;9(2):88-93.

[8] Gupta P, et al. Clinical Importance of Stanya and Artava in the Management of Rasa Dhatu Vikriti. J Res Ayurved Sci. 2020;4(3):112-118.

[9] Mishra S. Text Book of Kriya Sharira (Human Physiology in Ayurveda). Varanasi: Chaukhambha Publications; 2015. p. 245-250.

[10] Kumar H. A Contemporary View on Snayu and Kandara in Relation to Connective Tissue. Ancient Sci Life. 2017;36(4):210-215.

[11] Tripathi KM, Nikhate SP, Raole VV, Kumar S. a Conceptual Study of Updhatu in Ayurveda. The Pharma Innovation Journal. 2019;8(5):321-326.

[12] Paradakara HSS, editor. Ashtanga Hridayam with Commentaries of Arunadutta and Hemadri. Varanasi: Chaukhambha Surbharati Prakashan; 2002.

[13] Ghanekar BG, editor. Sushruta Samhita Sharir Sthan. New Delhi: Meharchand Laxman Das Publication; 2005.

[14] Krishnamurthy KH, editor. Bhela Samhita. Varanasi: Chaukhambha Vishwa Bharati; 2006.

[15] Sharaf A, editor. Bhavprakash Nighantu Pradeep. Nashik: Aatreya Prakashan; 2007.