WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.453
Volume 14, Issue 4, 493-500. Review Article ISSN 2277–7105

MEASURES FOR ASSESSMENT OF SAPTA DHATUS: A COMPREHENSIVE AYURVEDIC REVIEW

Dr. Bhavya Pandey*[1] and Prof. (Dr.) Srikanta Kumar Panda[2]

[1]MD Scholar, PG Department of Kriya Sharira, Ayurvedic and Unani Tibbia College, New Delhi.

[2]Professor, Department of Kriya Sharira, Ayurvedic and Unani Tibbia College, New Delhi.

Article Received on
01 January 2025,

Revised on 19 Jan. 2025,
Accepted on 09 Feb. 2025

DOI: 10.20959/wjpr20254-35605

***Corresponding Author**
Dr. Bhavya Pandey
MD Scholar, PG Department of Kriya Sharira, Ayurvedic and Unani Tibbia College, New Delhi.

ABSTRACT

The concept of Dhatus—the seven fundamental tissues—forms the cornerstone of Ayurvedic anatomy and physiology. These include *Rasa* (plasma), *Rakta* (blood), *Mamsa* (muscle), *Meda* (fat), *Asthi* (bone), *Majjā* (bone marrow and nervous tissue), and *Śhukra* (reproductive tissue). Each *Dhātu* performs distinct physiological functions and serves as the basis for maintaining overall health and well-being. Imbalances in any *Dhātu* can manifest as various diseases, necessitating thorough assessment and diagnosis. Therefore, a detailed review of the measures for evaluating each *Dhātu* using classical Ayurvedic frameworks alongside modern diagnostic tools is need of present era. This article presents Innovative and integrative methods to comprehend *Dhātu* assessment supported by textual references which could also add on the to the knowledge of students regarding dhatus and help them with better understanding of the topic.

KEYWORDS: *Dhatu, Dhatu Assessment, Dhatu Poshan.*

INTRODUCTION

Rasayana (rejuvenation) therapy and medication are combined in Ayurveda's unique healing approach to treat ailments and maintain health.[1] An active cell is always a necessary part of a living thing. *Dhatus's* two primary duties are *Poshana* and *Sharira Dharana*[2.] The word *Dhatu* means "bears" or "supports," while the word *Sapta* means "*seven*." The seven primary tissues of the body give the total structure, growth, and nourishment, according to Ayurveda[3] These seven tissues are *Rasa* (plasma), *Rakta* (blood), *Mamsa* (muscle), *Meda* (fat), *Asthi*

(bone), *Majja* (bone marrow and nervous tissue), and *Shukra* (reproductive tissue). *Dhatus* are a type of tissue that shares many characteristics with the primary tissue that has been identified by current science**.** In this review, we discuss the traditional understanding of *Sapta Dhatu* and evaluate the contemporary methods available for their measurement, incorporating modern approaches.

MATERIALS AND METHODS

The data was derived from various Ayurvedic classical texts, relevant modern medical science books, Ayurvedic and allied pharmaco-clinical dissertation works, websites and research & review articles published so far using PubMed, Medline, Google Scholar and manual search.

Literature review

The balance of *Tridosha*, *Saptadhatu*, and *Trimala* forms the basis of Ayurveda's core concept. After a meal, each of these is appropriately nourished by the effect of the potency of *Jatharagni* (digestive energy).[4] Then, for nourishment, the productive nutrients *(Ahara Rasa)* reaches to each level of *Dhatu* (body tissues). In the end, a single pool provides all the nutrients required for each tissue's synthesis and growth. They are taken to the *Dhatus's* place to help them. The feeding of each *Dhatus* (the metabolic energy of each tissue) is influenced by the function of each *Dhatvagni*. Each *Dhatvagni's* main duty is to encourage the development of self-clones of the relevant tissue and dependent tissues (*Upadhatus*). Consequently, the *Dhatus* of *Rasa*, *Rakta*, *Mamsa*, *Meda Asthi Majja*, and *Shukra* develop sequentially and support one another. *Rasadhatvagni*, for example, is essential to the transformation of *Rasa Dhatu* into *Rakta Dhatu*, and the *Mamsa Dhatu* is further nourished by the effect of *Raktadhatvagni*. The process of producing the next *Dhatu* may be impacted if the potency of any degree of *Dhatvagni* changes. *Dhatumala*, or tissue excreta, are specific metabolic byproducts that are created during this process. Everyone experiences the same Dhatu differentiation and development phenomenon during their lives. Any *Avarana* (obstruction) or *Dushti* (vitiation) *Srotas* (tissue microcirculation) could result in tissue deformation. Some theories of tissue genesis and development are explained by Ayurveda *(Dhatu Pushti Nyaya)*. The four main theories *Khale Kapota Nyaya, Ksheera Dadhi Nyaya, Kedara Kulya Nyaya, and Ek Kala Dhatu Pushti Nyaya* are the four main hypotheses. The *Dhatvagni* of each *Dhatu* basically separates necessary components into three divisions during feeding from *Rasa* to *Shukra Dhatu*: *Sukshma*, *Sthula*, and *Mala Bhaga*.

Dhatus description according to our ayurvedic classical texts is as follows[5-8]

1. Rasa Dhatu

Because *Rasa Dhatu* have *Jala Mahabhuta* dominating, it can move *Vata* and move nutrients and other biomaterials around. Every tissue is replenished with *rasa*, or plasma. Since *Rasa Dhatu* is primarily made of water, it may readily carry out movement functions. According to contemporary research, it is like the body's extracellular fluid and plasma, which aid in moving vital components from one location to another. A person who lacks *Rasa Dhatu* (*Rasa Dhatu Kshaya)* anatomically has dry skin, seems dreary and slender, and gets exhausted easily. Whereas *Rasa Dhatu* vriddhi manifests as Anorexia, excessive salivation, nausea, heaviness, and lethargy.

2. Rakta Dhatu

Agni is dominated in *Rakta Dhatu*, which takes on a red hue when *Pitta* is present. Its primary functions include carrying nutrients and *Prana* (oxygen) throughout the body. *Rakta* keeps life going by delivering oxygen to every tissue. According to contemporary research, it is comparable to blood. It regulates Pitta dosha, promotes complexion, and nourishes Mamsa dhatu. Depletion of *Rakta dhatu* results in lustre loss and impacts *Pitta dosha* function. Conditions including anaemia, constipation, lethargy, and physical exhaustion are caused by an anatomical shortage of *Rakta dhatu*. Excess *Rakta dhatu* raises *Pitta dosha* quality and causes the body to become hot. Both the frequency of bowel movements and urine are increased by this.

3. Mamsa Dhatu

All organs are covered by *Mamsa Dhatu*, which also offers stability and strength. *Mamsa Dhatu* makes it easier for bones and joints to move. Because *Mamsa Dhatu* is composed of earth, it is stiff. It nourishes *Meda dhatu*, fortifies the body, and increases muscle tissue. The *Kapha dosha* governs *Mamsa Dhatu*. Physical weakness, joint pain, emaciation, and sensory deficit are all symptoms of an anatomical lack of *Mama Dhatu.* The overabundance of *Mamsa dhatu* causes inflammation of the lymph nodes, fatty organs to grow, tumours to appear, etc.

4. Meda Dhatu

Because of the presence of the Prithvi element *meda dhatu* is soild and firm in nature, but *Dhatu*, is prevalent with *Jala and Prithvi* element. *Meda Dhatu* provides a site for the body to store extra fat. According to contemporary science, it functions similarly to fat tissue, keeps

the body lubricated, and makes the tissues become oily. *Asthi dhatu* is nourished by *Meda dhatu*, which is regulated by *Kapha*. Depletion of *Medas dhatu* results in splenic enlargement, joint movement restriction, body emaciation, and a lean body frame. Lethargies and obesity are caused due to excess of Medas dhatu. Breathlessness and profuse perspiration are among the symptoms due to excess of *meda dhatu* in body.

5. Asthi Dhatu

Asthi dhatu, which is fed by *Aharan* nutrients, offers the body stability and strength. According to contemporary exploration, *Asthi dhatu* is associated with the bones and cartilage that sustain the body and serve as connective tissue. Its air and space factors predominate structurally. It's controlled by *Vata dosha* and nourishes *Majja dhatu*. *Asthi dhatu* reduction results in teeth weakening, riddling pain in the bones, dropped bone strength, and pervious and fragile bones. Bone growth is abnormal when there's excess of *Asthi dhatu*.

6. Majja Dhatu

Majja Dhatu is connected to the neural system and controls the spinal cords metabolic functions. According to contemporary wisdom, bone gist that fills in bony gaps is related to *Majja dhatu*. Because *Majja Dhatu* is composed of water, it promotes memory and good intellectual property. It strengthens joints and is controlled by *Kapha dosha*. *Majja dhatu* insufficiency results in giddiness, dizziness, and common weakness.

7. Shukra dhatu

Shukra dhatu is considered as substance of the *Dhatus* and responsible for reproductive conditioning. It gives life and vitality; it resembles sperm in males and ovum in ladies. The optimum position of *Shukra dhatu* provides strength and reproductive power. Shukra dhatu is regulated by *Kapha dosha* and made up of water element. The depletion of *Shukra dhatu* leads loss of reproductive power, pain in testicles, weakness in body and thirst. The excess of *Shukra dhatu* increases desire of sexual conditioning and gravestone in the *Shukravaha strotas* may also do.

Summary of dhatu, their karma, Sthana and Pramana.[9-11]

Dhatu	Comparing tissue	Guna	Sthana	Karma	Pramana
1.Rasa Dhatu	Plasma	*Drava* (liquid) *Snigdha*(unctous) *Sara*(mobile) *Manda*(slow) *Sweta*(white) *Apyagunas*(properties of	*Amasaya*(stomach) *Hrdaya*(heart) *Dhamanis*(arteries,vein and lymphatics) *Twak*(skin)	*Prinana*(nourishing) *Tusti*(satisfying satiation) *Raktapusti*(nourishing)	Nine *anjalis*

		water)			
2.Rakta Dhatu	Blood	*Usna* (warm) *Tiksna* (penetrating) Viras (bad smell) *Sara* (mobile) *Drava* (fluid) *Laghu* (light) *Spandana* (pulsating) *Raga* (red colour) *Isatlavana* (slightysalty)	*Yakrt* (liver) *Pliha* (spleen) *Dhamanis* (blood vessels) *Mamsa* (muscles)	*Jeevana* (supporting life) *Usmakara* (responsible for body temprature) *Varnakara* (responsible for red colour all over the body) *Mamsapustikara* (nourishing the next *dhatu)*	Eight *anjalis*
3.Mamsa Dhatu	Muscles	*Sthula* (gross) *Sthira* (static) *Guru* (heavy) *Snigdha* (unctous) *Picchila* (slimy	*Bahya* (externally adhering to the bone) *Abhyantra* (internalling forming the Avayavas i.e. organs)	*Dehalepa*(covering over the body forming the contour) *Cestakara*(responsible for all movement) *Medaspustikara*(nourishment of fat the next tissue.)	Not mentioned in Ayurvedic text
4.Meda Dhatu	Fat tissue	*Snigdha*(unctous) *Slaksna*(smooth) *Guru*(heavy) *Sandra* (thick liquid) *Mrdu*(soft) *Pita*(yellow) *Apya* and *Parthiva* properties	*Sphik*(buttocks) *Udara*(inside and outside the abdomen) *Vapavahana*(omentum) *Vrkkas*(kidney) *Asthis*(bone)	*Snigdha* (lubrication to the body) Dardhya (stability and plumpiness) *Asthipusti* (nourishment to *astidhatu)*	Two *anjalis*
5.Asthi Dhatu	Bone tissue	*Guru*(heavy) *Sthira*(stable) *Khara*(rough) *Kathina*(hard) *Sweta*(white) *Parthiva* properties	*Sakhas*(extremities) *Kati*(waist) *Jaghana*(pelvis) *Prsta*(back) *Uras*(chest) *Siras*(head)	*Dharana* (supporting the body by providing the erect posture) *Majjapustikara* (nourishment the *majjadhatu*)	Not mentioned in Ayurvedic tex
6.Majja Dhatu	Bone marrow	*Sandradrava*(thick liquid) *Snigdha*(unctous) *Slaksna*(smooth) *Mrdu*(soft) Pita (yellow) *Sarakta*(slight red)	*Asthiabhyantra*(inside the cavity of the bone)	*Asthipurana* (filling the cavity of bone) *Snehana*(lubrication) *Balakara*(provide strength) *Sukrapustikara*(nourishing the *sukradhatu*)	One *anjalis*
7.Shukra Dhatu	Reproductive Tissues	*Drava*(liquid) *Sita*(cold) *Snigdha*(unctous) *Bahala*(thick) *Sweta*(white) *Madhura*(sweet)	In men *Vrsanas*(testis) *Medhra*(penis) In women *Phalakosa*(ovaries) *Yoni*(genital tract.)	*Dhairya*(courage) *Harsa*(pleasure) *Bala*(strength) *Garbhopatti*(formation of embryo procreation.)	Half *anjalis*

DISCUSSION

Prakriti never changes, but *Sara* keeps changing constantly. *Sara* refers to the essence of each *dhatu* (tissue). If *dhatus* are assessed using textual knowledge and modern contemporary methods, we can find a great scope for maintaining their balance, which can ultimately lead to significantly better health for a person. Subjective diagnostic methods like *Darshanam* (visual inspection) and *Nadi Pariksha* (pulse diagnosis) are used in Ayurveda, the traditional system of holistic health. Nonetheless, quantitative techniques for assessing the tissues connected to the *Sapta Dhatu* (Seven Bodily Tissues) have been offered by developments in contemporary biomedical science.

1. Rasa Dhatu (Lymphatic and Plasma Fluid)

Contemporary Equivalents: Lymphatic fluid and plasma

Red and white blood cells are among the plasma components that are evaluated by a complete blood count (CBC).

Biochemical Tests: Assess plasma proteins and electrolytes could be used to assess rakta dhatu to ensure ideal fluid balance.[12]

2. Rakta Dhatu (Blood)

Modern Equivalents: Blood in circulation

The ability to carry oxygen is determined by haemoglobin concentration and red blood cell count (CBC).

Flow Cytometry: An advanced technique for assessing cellular integrity.[13]

***3. Mamsa Dhatu* (Muscle Tissue)**

Modern Equivalents: Muscular system

Electromyography (EMG): Evaluates muscle function and nerve activity.

Magnetic Resonance Imaging (MRI): Provides structural analysis of muscle tissues.[14]

***4. Meda Dhatu* (Fat Tissue)**

Modern Equivalents: Adipose tissue

Dual-Energy X-ray Absorptiometry (DEXA): Measures body fat percentage and distribution.

Lipid Profile Tests: Analyze fat metabolism, including cholesterol and triglycerides.[15]

***5. Asthi Dhatu* (Bone Tissue)**

Modern Equivalents: Skeletal system

Bone Mineral Density (BMD) Testing (DEXA): Determines bone strength and health.

Biochemical Markers: Alkaline phosphatase and calcium levels for bone metabolism assessment.[16]

***6. Majja Dhatu* (Nerve Tissue & Bone Marrow)**

Modern Equivalents: Nervous system and marrow

Bone Marrow Biopsy: Evaluates cellular composition of marrow.

Neuroimaging (MRI): Assesses brain and nervous system health.[17]

***7. Shukra Dhatu* (Reproductive Tissue)**

Modern Equivalents: Reproductive fluids and hormones

Semen Analysis: Measures sperm count, motility, and morphology.

Hormonal Tests: Evaluate testosterone and other reproductive hormones.[18]

Integrative Approaches for Comprehensive *Dhātu* Assessment

1. Personalized Diagnostics

Integrating Ayurvedic diagnostics with modern techniques enables personalized treatment plans. For instance, lipid profiling can complement *Meda Dhātu* assessment, while advanced imaging enhances the understanding of *Asthi Dhātu*.

2. Biomarkers Linked to Ayurvedic Concepts

Research focusing on biomarkers, such as inflammatory markers for *Rakta Dhātu* or cortisol for *Majjā Dhātu*, can link traditional concepts to biomedical parameters.

3. Digital Integration

AI-driven tools and mobile health applications can provide practitioners with advanced analytics for real-time *Dhātu* assessment.

CONCLUSION

The significance of balanced tissue functioning for general health is emphasized by the *Sapta Dhatu* concept. The use of Ayurvedic principles could be improved and validated by modern measurement techniques. To create standardized procedures and fortify Ayurveda's scientific basis, more multidisciplinary research is required. Even though Ayurveda and modern biomedicine have different diagnostic frameworks, integration provides a thorough understanding of human health. Ayurveda offers qualitative assessments based on holistic principles, while biomedical techniques add precision and objectivity. Research projects that validate Ayurvedic concepts using contemporary science can help Ayurveda gain more recognition and acceptance. The fusion of Ayurvedic wisdom with modern biomedical techniques provides a comprehensive approach to health assessment. By integrating these traditional insights with cutting-edge diagnostic tools, we can achieve a deeper understanding of bodily functions and maintain holistic well-being.

REFERENCES

1. Central Council for Research in Ayurvedic Sciences. Rasayana - Ayurvedic rejuvenation therapy [Internet]. Available from: http://ccras.nic.in/content/rasayana-ayurvedic-rejuvenation-therapy.
2. Sri Sri Tattva Panchakarma. Saptha Dhathu Vruddhi Lakshana [Internet]. Available from: https://www.srisritattvapanchakarma.com/saptha-dhathu-vruddhi-lakshana/.

3. Astha Ayurveda. Saptadhatu: The seven bodily tissues [Internet]. Available from: https://www.asthaayurveda.in/saptadhatu-the-seven-bodily-tissues.php.
4. Dalhanacharya, commentator. Sushruta Samhita, Sutra Sthana, Doshadhatumala Kshayavriddhi Vigyaneeyam Adhyaya, 15/41; pp. 75.
5. Byadgi PS. Ayurvediya Vikrti – Vijnana and Roga Vijnana. Vol.1. Choukhamba Bharti Academy; Reprint, 2017; 449.
6. Dhargalkar N. Sharir Kriya Vidanan. Vol. II. Choukhamba Bharti Academy; Reprint, 2008; 363.
7. Tirtha SS. The Ayurveda encyclopedia: Natural secrets to healing, prevention, and longevity. Sat Yuga Press, 20.
8. Benitah SA, Frye M. Stem cells in ectodermal development. J Mol Med (Berl). 2012; 90: 783–90. [Last accessed on 2013 Mar 22].
9. Sharma RK, Dash B, editors. Caraka Samhita-Text with English translation, critical exposition based on Chakrapani Datta's Ayurveda Dipika. Sarirasathana, Chapter 7, Verse 15, 16, Vol. 2. Varanasi: Chaukamba Sanskrit Series, 2009; 458.
10. Kaviraja Atridevagupta. Astanga Hrdayam of Vagbhata edited with the 'Vidyotini' Hindi commentary. Sutrasthana Chapter 27, Verse 1. Varanasi: Chaukamba Sanskrit Series, 2010; 202.
11. Sharma PV. Susruta Samhita – Text with English translation and Dalhana's commentary along with critical notes. Sutrasthana Chapter 15, Verse 5. Varanasi: Chaukamba Sanskrit Series, 2010; 1: 158.
12. Guyton AC, Hall JE. Textbook of Medical Physiology. 12th ed. Philadelphia: Elsevier, 2011.
13. Hoffbrand AV, Moss PAH. Essential Haematology. 7th ed. Wiley Blackwell, 2016.
14. Kukuljan S, Nowson CA. Exercise and bone health. Med J Aust., 2012; 196(11): 686-91.
15. Grundy SM. Metabolic syndrome: Connecting and reconciling cardiovascular and diabetes worlds. J Am Coll Cardiol., 2006; 47(6): 1093-100.
16. Kanis JA. Diagnosis of osteoporosis and assessment of fracture risk. Lancet, 2002; 359(9321): 1929-36.
17. Pavese N, Brooks DJ. Imaging neurodegeneration in Parkinson's disease. Biochim Biophys Acta., 2009; 1792(7): 722-9.
18. World Health Organization. WHO Laboratory Manual for the Examination and Processing of Human Semen. 5th ed. Geneva: WHO, 2010.