

**INTER-RELATIONSHIPS WITH MODERN SCIENCE AND CLINICAL RELEVANCE OF
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INTRODUCTION

Ayurveda, one of the oldest systems of medicine, originated in India over 5,000 years ago. It is a comprehensive system of healthcare that focuses on achieving optimal health and well-being through a holistic approach, encompassing the physical, mental, and spiritual aspects of an individual. Ayurveda recognizes the importance of balance and harmony in the body, and the concept of "Sapta Dhātu" plays a crucial role in achieving this balance. Ayurveda says, "Swasthasya swasthya rakshanam, aturasya vikara prashamanam cha."¹

"The main purpose of Ayurveda is to maintain the health of a healthy person and alleviate the ailments of the diseased." In Sanskrit, "Sapta" means seven, and "Dhātu" refers to the basic building blocks of the body. "Dhātu" refers to "tissue" or "element" in Sanskrit. According to Ayurveda, the seven Dhatus are: Rasa (plasma or lymph), Rakta (blood), Mamsa (muscles), Meda (adipose tissue), Asthi (bones), Majja (bone marrow), and Shukra (reproductive tissue). These Dhatus are formed sequentially from the food we eat, and each Dhātu has its own unique qualities and functions. These Dhatus are sequentially formed from the food we consume and are interrelated in their formation, nourishment, and functions. Understanding the characteristics, functions, and significance of these seven Dhatus is vital in the diagnosis, treatment, and prevention of diseases in Ayurveda. These tissues are interconnected and play a crucial role in maintaining overall health and well-being. In this article, we will explore the concept of Sapta Dhātu in detail and understand its significance in Ayurveda.

"Samadosha samagnischa, samadhatumalkriyah, prasannatmendriyamanah, swastha ityabhidhiyate."²

"One whose doshas (bioenergies), agni (digestive fire), dhatus (tissues), and malas (waste products) are in balance, and whose mind, soul, and senses are in a state of bliss, is considered healthy.

MATERIALS AND METHODS

Literature Search Strategy.

- Classical sources: Charaka Samhita, Sushruta Samhita, Ashtanga Hridaya.
- Modern databases: PubMed, Scopus, Web of Science, Google Scholar.
- Keywords: "Dhātu," "Ayurveda," "Samhita," "tissue physiology," "clinical relevance."

Classical Concept of Dhatus

- Rasa Dhātu: Represents plasma/nutrient fluid, nourishes all tissues, supports immunity.
 - Rakta Dhātu: Corresponds to blood; maintains oxygenation, metabolism, and vitality.
 - Mamsa Dhātu: Muscle tissue providing structural support, mobility, and protection.
 - Meda Dhātu: Adipose/fat tissue, providing lubrication, insulation, and energy storage.
 - Asthi Dhātu: Bone tissue, structural framework, and mineral reservoir.
 - Majja Dhātu: Bone marrow and nervous tissue, responsible for hematopoiesis and neural conduction.
 - Shukra Dhātu: Reproductive tissue, responsible for fertility, progeny, and vitality.
2. Dhātu Formation and Metabolic Dynamics.

Sequential nourishment through Dhātu Poshana.

Rasa → Rakta → Mamsa → Meda → Asthi → Majja → Shukra.

Agni (digestive/metabolic fire) plays a central role; disturbances can lead to improper tissue formation and disease.

Classical texts emphasize balance and quality of Ahara (diet), Vihara (lifestyle), and Ojas (vitality) for Dhatu maintenance.

Rasa (Plasma)

Rasa Dhatu is the first Dhatu formed from the digestion of food, and it represents the plasma or the watery part of the blood. It is responsible for nourishing the body and serves as the source of nutrition for all other Dhatus. Rasa Dhatu is characterized by its cooling, soothing, and nourishing properties. Rasa Dhatu provides the foundation for the formation of all other Dhatus and is associated with emotions and immunity. According to Ayurveda, Rasa Dhatu is primarily composed of the water and earth elements, and it is responsible for maintaining the fluid balance in the body. It is formed from the food we eat through the process of digestion and assimilation. The quality of Rasa Dhatu depends on the quality of the food we consume, as well as the strength of our digestive fire (Agni) and the efficiency of our digestive system. The functions of Rasa Dhatu are multifaceted and play a crucial role in maintaining overall health.

Some of the key functions of Rasa Dhatu include.

Nourishment: Rasa Dhatu nourishes all the cells, tissues, and organs in the body. It carries essential nutrients, such as proteins, carbohydrates, vitamins, and minerals, to various parts of the body, ensuring their proper growth, repair, and functioning.

Rakta dhatu

Made up of the fire element. It can be compared with formed elements of blood like Red Blood Cells(RBC), White Blood Cells(WBC), and Platelets etc.

Functions

It takes care of our complexion, nourishes Mamsa dhatu and is governed by pitta dosha. When rakta dhatu is depleted, the qualities of pitta dosha and fire diminish. A person feels cold, the skin loses its luster becoming pale or dusty gray, and coldness causes the body to hold on to heat by becoming constipated and by reducing urination and sweat. In the mind, depletion of the rakta dhatu leads to dullness, and difficulty processing and understanding new information. This often leads to confusion and misunderstandings. Person has desire for sour and cold things. When the rakta dhatu is in excess, the qualities of pitta dosha and fire increase. A person feels warmer. As heat builds up in the body, the body tries to release the heat. The body tries to release the excess heat along with the malas of the body. The frequency of bowel movements increases and the stools may become loose. The frequency of urination also increases.

Mamsa Dhatu

Made up of earth element.

Functions

Strengthens the body, builds good muscle tissue in neck shoulder and thigh area. Nourishes meda dhatu and is governed by kapha dosha and earth element. When mamsa dhatu is depleted then it causes debility of sense organs, emaciation of cheeks, buttocks, pain in joints. When mamsa dhatu is in excess then produces enlargement of lymph glands, tumors, increase in size of cheeks, thighs, abdomen etc.

Meda dhatu

Made up of earth and water elements.

Functions

Well lubricates system, with oily and soft hair, skin and efficient eyes. Nourishes Asthi dhatu and is governed by Kapha. When medas dhatu is depleted then it leads to spleen enlargement, difficult joint movements, emaciation at abdomen, desire to consume fatty food. When medas dhatu is in excess then person gets tired, fat increases at abdomen, thighs, neck etc, and foul smell in sweat, shortness of breath etc.

Asthi dhatu

Made up of air and space elements.

Functions

Supports the body. Gives good structure and stability with hard working capacity to the body. Nourishes Majja dhatu. Asthi dhatu is governed by vata dosha. When asthi dhatu is depleted then there is pricking pain in bones, falling of teeth, nail and hairs. Bones become porous, get easily fractured. Increase in asthi dhatu lead to excessive growth of bones.

Majja dhatu

Made up of water element.

Functions

Imparts sharp, clear mind with good intellect and memory. Strong joints. Govern by kapha dosha. When majja dhatu is depleted then bones get weak, joint pain, vertigo, giddiness occur and shukra dhatu is also depleted. When majja dhatu is in excess then heaviness in eyes, and whole body occurs.

Shukra dhatu

Functions

Has patience, enjoys life and body strength. Reproductive needs are concern. Govern by kapha dosha. In case of shukra dhatu depletion ejaculation is delayed, bloody ejaculation occurs, pain in testicles, body is weak and thirst occurs. When there is excess of shukra dhatu desire of excess coitus is there and stone in the shukravaha strotas may occur with pain.

Formation and nourishment of dhatu

The dhatu are formed from first transformed food into nutrient fluid called ahara-rasa (prasada). This nutrient fluid nourishes body components in a sequential pattern. It first nourishes the rasa dhatu, then rakta, then mamsa etc. The nutrients present in the food nourish respective dhatu qualitatively and quantitatively.^[7] Furthermore, during the process of metabolism, dhatus undergo a specific pathway through their own characteristic digestive enzymes termed as „dhatvagni. In this process, each dhatu gets converted into two parts: poshya (which nourishes itself) and poshaka (which nourishes others). The poshya fraction is responsible for dhatu's own nourishment and functions. The poshaka fraction nourishes further other dhatus. By-products (Upadhatu) and waste products (mala) are also formed in this dhatu metabolic process. thus, each dhatu nourishes its next sequential dhatu.^[8] The major functions of seven dhatus are listed as nourishment (preenana), vitalizing (jeevana), covering (lepa), moistening (snehana), supporting (dharana), filling (poorana), and reproduction (garbhoptadana) respectively.

Interrelationships and Clinical Relevance

- Imbalance in one Dhatu affects downstream Dhatus.
Example: Rasa deficiency leads to Rakta-related disorders (anemia, bleeding tendencies).

• Disease Correlation

Mamsa imbalance → muscular dystrophy, weakness.
Meda imbalance → obesity, lipid disorders.
Asthi deficiency → osteoporosis, fractures.
Majja imbalance → neurological disorders, anemia.
Shukra deficiency → infertility, hypogonadism.
Rasa → plasma, lymphatic fluid.
Rakta → red blood cells, hemoglobin.
Mamsa → skeletal muscle, connective tissue.
Meda → adipose tissue.
Asthi → bone tissue.
Majja → bone marrow, nervous tissue.
Shukra → gametes (sperm, ova).

DISCUSSION

The Dhatu system provides a structured understanding of tissue physiology and pathology. Classical Samhitas emphasize sequential nourishment, interrelationships, and the centrality of Agni in tissue health. Modern correlations demonstrate that Dhatu imbalances correspond with clinical syndromes observed in contemporary medicine, such as anemia (Rakta), osteoporosis (Asthi), metabolic disorders (Meda), and neurodegenerative diseases (Majja). Integration of Dhatu assessment into modern clinical practice supports personalized and preventive healthcare. For instance, targeting Meda imbalances can guide obesity management, while Shukra-focused therapies can address infertility. Advances in molecular biology, imaging, and biochemical profiling can further validate classical Dhatu concepts. Challenges include standardizing assessment methods, quantifying Dhatu

quality, and translating qualitative classical descriptors into measurable clinical parameters. Future research should aim for multicenter clinical trials integrating Ayurvedic diagnostics with modern biomarkers to establish evidence-based Dhatu-targeted therapies.

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