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**THE AYURVEDIC CONCEPT OF DHATU: UNDERSTANDING THE
BODY'S NUTRITIONAL AND STRUCTURAL ELEMENTS-A
NARRATIVE REVIEW**

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ABSTRACT

According to the World Health Organization (WHO), the term Ayurveda literally means "knowledge of life." It encompasses the physical, psychological, spiritual, social, and subtle dimensions of life, along with the dynamic concepts of well-being, health promotion, and the prevention and management of diseases. Dhatus are the structural elements of the body. The metabolic process involves functions such as providing energy, nourishment, binding/covering, and shaping, allowing for the movement of structures, providing support, replenishing lost tissues, and facilitating procreation. These structural elements of the body that participate in these functions are collectively classified as Dhatus.

In short, Dhatu is one of the chief components of Ayurveda, which nourishes, supports, and sustains the mind and vitality of the living body. Well-nourished Dhatus give strength to the body and maintain health. To fully understand the role of Dhatus in either strengthening or weakening

the body's ability, it is necessary to gain a thorough understanding of the process by which Dhatus are formed, as well as their properties and functions. In this review article, we will discuss all these aspects.

Keywords: Ayurveda, Dhatu, Saptadhatu, Ahara, Nutrition

INTRODUCTION

Ayurveda is not only therapeutic but also promotes a healthy lifestyle to prevent diseases rather than cure them. The aim of Ayurveda is to preserve the health of an individual and to eliminate diseases from a diseased person. Ayurveda places more importance on the preventive aspects of disease. According to Ayurveda, the body is made up of Tridosha, Saptadhatu, and Trimala. The body shows signs of disease when Doshas and Dhatus are imbalanced. Dhatus play a dual role that is both nutritional and structural. Here, we are going to discuss the role of Dhatus in the human body [1].

Origin of Dhatu: The food we consume undergoes digestion through Jatharagni (gastric fire) and Panchabhautika Agni (the five physical fires). After metabolism, the food material taken in is divided into two parts – the useful part and the unuseful part. The unuseful parts are eliminated from the body in the form of sweat, urine, and stool, while the useful parts are known as Anna-rasa/Ahara rasa/Sara paka. The essence of the food (Sara paka) nourishes the Rasaadi Dhatus, Ojas, and substances of the five sense organs, along with

bodily joints, muscles, and tendons. Kitta paka contains urine, feces, sweat, and the excretory substances (Malas) from the ears, eyes, nose, mouth, skin pores, and genitals, including hair, etc. [1].

There are 7 Dhatus as follows: Rasa, Rakta, Mamsa, Meda, Asthi, Majja, and Shukra.

According to Charaka, Vagbhata, and Bhela, Dhatus are produced sequentially by receiving nutrients from the preceding Dhatu. Rasa nourishes Rakta (blood), Rakta nourishes Mamsa (muscle tissue), Mamsa nourishes Meda (fat), Meda nourishes Asthi (bones), and Asthi nourishes Majja (bone marrow). Finally, Majja provides nourishment to Shukra (semen) [2, 3, 8].

Functions of Dhatus:

1. Rasa: Nourishment
2. Rakta: Sustenance of life
3. Mamsa: Covering
4. Meda: Lubrication
5. Asthi: Support
6. Majja: Filling up
7. Shukra: Conception

Rasa Dhatu: It functions from intrauterine life, nourishing, strengthening, and satisfying

the body's requirements. The entire life of the fetus depends on Rasa Dhatu. It forms breast milk and menstrual blood as Upadhatus (sub-tissues) and nourishes the Rakta Dhatu (blood).

Rakta Dhatu: It provides complexion, strength, happiness, and longevity and plays a vital role in the sustenance of Prana (life force), keeping an individual alive, and nourishing Mamsa Dhatu (muscle).

Mamsa Dhatu: It covers the body and nourishes Meda Dhatu.

Meda Dhatu: It produces unctuousness, sweat, firmness, lubrication, stability to the body, and moistness to the eyes, and it nourishes Asthi Dhatu.

Asthi Dhatu: It is responsible for the appropriate posture of the body and nourishes Majja Dhatu.

Majja Dhatu: It provides unctuousness, strength, nourishes Shukra Dhatu, and fills the Asthi (bones).

Shukra Dhatu: It is responsible for the formation of the embryo.

Nutritional Aspect: Sequential Nourishment

In Ayurveda, the seven Dhatus (Rasa, Rakta, Mamsa, Meda, Asthi, Majja, and Shukra) represent different tissues that are sequentially nourished by the transformation of nutrients. Each Dhatu depends on the nourishment received from the previous one,

starting with Rasa (plasma) and culminating in Shukra (reproductive tissue). Balanced nutrition ensures that each Dhatu receives the necessary components for proper growth and functioning, facilitating the sequential flow of nourishment and supporting overall bodily health [2, 3, 8].

Role of Ahara (Diet)

Ahara (diet) is fundamental in Ayurveda, as it forms the basis of the nutritional essence that nourishes the Dhatus. Proper diet and digestion lead to the formation of high-quality Ahara Rasa, which directly affects the quality of each Dhatu. An imbalanced or poor diet can disrupt this chain, leading to weak or deficient Dhatus and impacting overall health. Therefore, consuming a balanced diet rich in natural, whole foods and free of harmful substances is critical to maintaining healthy Dhatus.

Metabolic Transformation

The process of metabolic transformation begins with digestion in the gastrointestinal tract, where nutrients are broken down and absorbed into Rasa Dhatu. From Rasa, nutrients transform sequentially into Rakta (blood), Mamsa (muscle), Meda (fat), Asthi (bone), Majja (marrow), and finally Shukra (reproductive tissue). Each stage of transformation further refines the nutrients, highlighting the importance of efficient

metabolism to sustain each Dhatu and promote overall health [2, 3, 8].

Maintenance of Vitality

Each Dhatu plays a specific role in maintaining bodily vitality. For instance, Rasa Dhatu ensures fluid balance and nutrient transport, Rakta Dhatu supports oxygenation and energy, and Mamsa Dhatu contributes to physical strength. Balanced nourishment of these Dhatus through proper diet and metabolic processes helps maintain vitality and energy levels, enabling the body to function optimally.

Building Immunity

Each Dhatu—Rasa (plasma), Rakta (blood), Mamsa (muscle), Medas (fat), Asthi (bone), Majja (marrow/nervous tissue), and Shukra (reproductive tissue)—plays a vital role in overall immunity. Proper nutrition and digestion ensure that each Dhatu functions optimally: Rasa supports nutrient transport and vitality; Rakta provides oxygen and nourishment; Mamsa contributes to physical strength; Medas aids in lubrication and energy storage; Asthi offers structural support and houses marrow; Majja produces blood cells and supports the nervous system; and Shukra enhances reproductive health and vitality.

The essence of these Dhatus, known as Ojas, represents the peak of health and immunity. Strong Ojas reflects a well-balanced body and

a robust immune system, resulting from the proper formation and function of all Dhatus. Thus, maintaining balanced Dhatus through adequate nutrition and healthy lifestyle practices is crucial for sustaining Ojas and, consequently, a strong immune response [5, 6, 7].

Balanced Nutrition for Structural Health

Structural health in Ayurveda is maintained through the proper formation and nourishment of Dhatus. For example, Asthi Dhatu (bones) relies on nutrients absorbed and processed by Meda Dhatu (fat tissue) for strength and density. Similarly, Mamsa Dhatu (muscle) provides support and physical structure. Consuming a balanced diet that supports the sequential formation of Dhatus ensures that each tissue maintains its structural integrity, contributing to overall body stability and resilience.

Structural Aspects

Formation of Body Tissues

The formation of body tissues (Dhatus) begins with the transformation of ingested food into Ahara Rasa, which serves as the initial nutritional fluid. This Ahara Rasa nourishes each Dhatu sequentially, starting with Rasa (plasma) and moving through Rakta (blood), Mamsa (muscle), Meda (fat), Asthi (bone), Majja (marrow), and Shukra (reproductive tissue). Each Dhatu undergoes

its unique metabolic process, guided by its specific Dhatu Agni (metabolic fire), which refines nutrients to maintain tissue health and function. This sequential nourishment is vital for the proper formation, maintenance, and balance of body tissues.

Support and Stability [2, 3, 8].

The Dhatus provide structural support and stability to the body. Asthi Dhatu (bones) is particularly significant in maintaining body structure and stability, giving form and providing the framework on which other tissues are anchored. Mamsa Dhatu (muscle) adds strength and protects bones and internal organs. The interdependence of these Dhatus ensures that the body remains strong, resilient, and capable of withstanding physical stress [2, 3, 8].

Growth and Repair

Growth and repair are essential functions governed by the continuous renewal of Dhatus. Each Dhatu has its *poshya* (self-nourishing) and *poshaka* (nourishing others) fractions that facilitate growth and repair. For instance, Rakta Dhatu (blood) not only replenishes itself but also nourishes the subsequent Mamsa Dhatu, aiding in muscle repair and regeneration. This cyclical nourishment allows the body to heal from injuries, maintain tissue integrity, and support overall growth. [3,4]

Protective Function

Several Dhatus have protective roles. Mamsa Dhatu, by building muscles, acts as a protective barrier for internal organs. Rakta Dhatu supports immune function, helping the body fight infections. The quality of Majja Dhatu (bone marrow) influences the production of immune cells, enhancing the body's defense mechanisms. Shukra Dhatu (reproductive tissue), though primarily associated with reproduction, also supports vitality and resilience, contributing indirectly to the body's overall protective capacity [3, 4].

Structural Harmony and Balance

The harmonious function of all Dhatus ensures that the body maintains structural balance. A balance among the Dhatus is crucial; for example, if Meda Dhatu (fat tissue) becomes excessive, it can lead to joint stress, while depletion of Asthi Dhatu can result in weak bones. Structural harmony is maintained when all Dhatus function optimally and in balance, allowing the body to perform with ease and efficiency [2].

Impact on Physical Appearance

Dhatus significantly impact physical appearance. Healthy Rasa Dhatu reflects in glowing skin, while Rakta Dhatu contributes to a radiant complexion. Mamsa Dhatu defines the body's muscular form, and Meda

Dhatu influences body shape by regulating fat distribution. Asthi Dhatu determines the body's skeletal structure, Majja Dhatu supports healthy hair and nails, and Shukra Dhatu enhances vitality, contributing to a healthy and youthful appearance. Balanced Dhatus thus ensure that one looks vibrant and physically fit [2].

Each Dhatu plays an integral role in maintaining the body's structure, supporting its functions, and influencing overall health. By ensuring proper diet, digestion, and balance of Dhatus, one can maintain optimal health, prevent diseases, and support longevity [2].

Modern Research and Scientific Correlation

Rasa Dhatu (Plasma and Extracellular Fluids)

Modern Correlation: Rasa Dhatu is closely related to plasma and lymph in modern science, comprising water, electrolytes, proteins, and nutrients that transport essential substances to cells and remove waste. [2,8]

Scientific Function: Plasma makes up about 55% of total blood volume and contains proteins (like albumin, globulins), glucose, clotting factors, and hormones, all critical for nutrient transport, immunity, and maintaining pH balance. [3]

Ayurvedic Relation:

In Ayurveda, Rasa Dhatu provides primary nutrition to other Dhatus, similar to how plasma distributes nutrients throughout the body.

Rakta Dhatu (Blood)

Modern Correlation: Rakta Dhatu aligns with blood, specifically the formed elements like red blood cells (RBCs), white blood cells (WBCs), and platelets [2, 8].

Scientific Function: Blood is essential for oxygen transport (via RBCs), immune response (WBCs), and clotting (platelets). Hemoglobin in RBCs carries oxygen from the lungs to tissues, while WBCs protect against infections [3].

Ayurvedic Relation: Rakta Dhatu is associated with oxygenation, complexion, and warmth, reflecting the *Pitta* qualities of blood in Ayurveda [7, 8].

Mamsa Dhatu (Muscle Tissue)

Modern Correlation: Mamsa Dhatu corresponds to skeletal muscles and connective tissues, responsible for movement and structural support [2, 8].

Scientific Function: Muscle tissue enables voluntary movements, stabilizes joints, and helps maintain posture. It also plays a role in thermogenesis and metabolism [3].

Ayurvedic Relation: Ayurveda sees Mamsa Dhatu as critical for strength and protection of internal organs, paralleling the

modern understanding of muscle's role in body support and movement [7, 8].

Meda Dhatu (Adipose Tissue)

Modern Correlation: Meda Dhatu is comparable to adipose tissue (body fat), which stores energy, insulates the body, and cushions organs [2, 8].

Scientific Function: Adipose tissue regulates metabolism, secretes hormones (like leptin), and acts as an endocrine organ influencing appetite and insulin sensitivity [3].

Ayurvedic Relation: Meda Dhatu lubricates and nourishes joints and bones and provides energy reserves, similar to the functions of body fat in modern physiology [7, 8].

Asthi Dhatu (Bone Tissue)

Modern Correlation: Asthi Dhatu correlates with the skeletal system, including bones, cartilage, teeth, and related connective tissues [2, 8].

Scientific Function: Bones provide structure, protect organs, facilitate movement through attachment to muscles, store minerals (like calcium), and produce blood cells in the marrow. [3]

Ayurvedic Relation: Ayurveda emphasizes Asthi Dhatu's role in providing stability and protecting internal structures, consistent with its modern anatomical role [7, 8].

Majja Dhatu (Bone Marrow and Nervous Tissue)

Modern Correlation: Majja Dhatu is linked with bone marrow and the nervous system, including the brain and spinal cord [2, 8].

Scientific Function: Bone marrow is a critical site for hematopoiesis (blood cell production), and the nervous system controls body functions, including cognition, movement, and sensory processing [3].

Ayurvedic Relation: In Ayurveda, Majja Dhatu is seen as responsible for intellect, mental clarity, and joint strength, aligning with the nervous system's role in cognitive and physical functions [7, 8].

Shukra Dhatu (Reproductive Tissue)

Modern Correlation: Shukra Dhatu corresponds to reproductive tissues and fluids, including sperm in males and ova in females, along with other components of the reproductive system [2, 8].

Scientific Function: These tissues are essential for reproduction, hormonal balance, and secondary sexual characteristics. They also play a role in libido and overall vitality [3].

Ayurvedic Relation: Ayurveda associates Shukra Dhatu with fertility, vitality, and overall strength, highlighting its role in physical and mental vigor.

Scientific Integration of Dhatu Functionality [7, 8]

Sequential Nourishment: Modern nutrition science confirms the importance of stepwise nutrient absorption and distribution, which parallels the sequential nourishment of Dhatus described in Ayurveda.

Metabolic Transformation: The concept of Dhatu Agni (metabolic fire) aligns with cellular metabolism and the biochemical processes that transform nutrients for use in bodily functions [2, 8].

Maintenance of Vitality: Modern physiology recognizes the role of hormones, enzymes, and nutrients in maintaining energy levels, immunity, and tissue repair, similar to the nourishing roles of Dhatus [4, 5].

Building Immunity: Each Dhatu contributes to the body's defense, from immune cells in the blood to the protective functions of muscle and fat, echoing Ayurveda's emphasis on maintaining balanced Dhatus for optimal immunity.

These correlations illustrate that, while Ayurveda uses different terminology, the fundamental concepts of tissue function, nourishment, and balance resonate strongly with modern biomedical understanding.

CONCLUSION

The seven Dhatus—Rasa, Rakta, Mamsa, Meda, Asthi, Majja, and Shukra—form the

core of Ayurvedic physiology, each playing a vital role in maintaining the body's structural and nutritional balance. These tissues are not only responsible for physical support and protection but also for vital functions such as metabolism, immunity, growth, and reproduction. By ensuring the optimal health of these Dhatus, Ayurveda emphasizes holistic well-being, where proper diet, digestion, and lifestyle directly influence tissue health and overall vitality.

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