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# A review article on types of *Dhatu-Kshaya* (depletion) and its clinical significance

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## ABSTRACT

*Ayurveda* is an old science that is very scientific and based on several fundamental principles. The science of life, or *Ayurveda*, categorizes the body's constituents within three essential elements *Dosha* (tissue entities), *Dhatu* (biological entities), and *Mala*, or waste materials. The balance between these entities is crucial to the durability and healthy lives for people. Similar to a progressive evolutionary metamorphosis, the production of *Saptadhatus* begins with the fundamental product of digestion, called *Rasa Dhatu*, and continues with the production of *Rakta* (blood tissue), *Mamsa* (muscle tissue), *Meda* (fat tissue), *Asthi* (bone tissue), *Majja* (bone marrow), and *Sukra Dhatu* (feces from reproduction). Every *Dhatu* is the basis for every other one and nourishes the one above it. The meals keep the steadily decreasing *Dhatus* in balance. That suggests the *Dhatus* are interdependent, with modifications to one causing modifications to the other. The goal of this review is to integrate different sources and arrive at a consensus. This paper explains the concept of *Dhatu-Kshaya* (depletion) in general terms and gives examples of how it can be used in real-world situations.

**Key words:** *Dhatu*, *Dhatu-Kshaya*, *Dhatu Siddhanta*

## INTRODUCTION

*Ayurveda's* special method of healing blends medicinal treatment with *Rasayana* (rejuvenation) therapy to keep people healthy and treat illnesses.<sup>[1]</sup> A functioning cell is always an essential component of a living organism. *Sharira Dharana* and *Poshana* are *Dhatu's* two main responsibilities.<sup>[2]</sup> *Dhatu* translates to "bears"

or "supports," whereas *Sapta* signifies "seven." According to *Ayurveda*, the body's seven main tissues provide structure, growth, and nourishment to the whole.<sup>[3]</sup> *Dhatus* are a kind of tissue that are similar to the primary tissue that modern science has discovered in many aspects. They are contained within the boundaries of the skin from the outside, and from the inner side, they are held the boundaries of the mucous membrane. Every *Dhatu* has an *Updhatu*, or subunit, which functions in tandem with the other *Dhatus* to fortify the body.<sup>[4]</sup> *Dhatus* are governed by the three biological humours, or *Doshas*. Unlike *Dhatus*, which nourish the body's tissues, *Updhatu* support and strengthen the body.<sup>[5]</sup> In *Ayurveda*, optimal tissue renewal is ensured by appropriate digestion and eating habits. Following complete digestion of food, tissue formation starts. The term "*Dhatu-Kshaya*" describes the thinning or loss of bodily tissues.<sup>[6]</sup> Knowing *Dhatu* and *Dhatu-Kshaya* is as important to learning about disease processes as knowing *Tridosha*. This review will

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highlight, evaluate, expound upon, and discuss *Dhatu-Kshaya*.

### AIM AND OBJECTIVES

1. To assess, elucidate, and converse about *Dhatu-Kshaya* in light of *Ayurveda*.
2. To demonstrate *Dhatu-Kshaya's* clinical significance.

### MATERIALS AND METHODS

Information about *Dhatu-Kshaya* is gathered from texts on *Ayurveda*, such as the textbooks of modern medicine, *Laghutrayi*, and *Bahatrayi*. Medical journals with and without indexes have also been consulted in order to compile data on pertinent subjects.

### LITERARY REVIEW

#### *Dhatu Siddhanta (Theory of tissues formation and differentiation)*

The central idea of *Ayurveda* is based on the equilibrium of *Tridosha*, *Saptadhatu*, and *Trimala*.

Each of these is suitably nourished following a meal by the influence of their own *Jatharagni* (digestive energy) potency.<sup>[7]</sup> Then, each level of *Dhatu* (bodily tissues) receives the productive nutrients (*Ahara Rasa*) for sustenance. Ultimately, all of the nutrients needed for the synthesis and growth of every tissue come from a single pool. Their assistance is transported to the *Dhatu's* location. Every *Dhatvagni's* function affects every *Dhatu's* feeding (the metabolic energy of every tissue). Promoting the growth of self-clones of the corresponding tissue and dependent tissues (*Upadhatus*) is the primary responsibility of each *Dhatvagni*. The primary function of each *Dhatvagni* is to promote the growth of self-clones of the corresponding tissue and dependent tissues (*Upadhatus*). Additionally, each *Dhatu's Dhatvagni* supplies the necessary vitamins to succeeding tissues, enhancing their ability to clone. As a result, the *Dhatu's* of *Rasa*, *Rakta*, *Mamsa*, *Meda*, *Asthi*, *Majja*, and *Shukra* grow in turn and nourish other *Dhatu's*. For instance, *Rasadhatvagni* is crucial to the development of *Rakta Dhatu* from *Rasa Dhatu*, and *Raktadhatvagni's*

influence further nourishes the *Mamsa Dhatu*. If there is a change in the potency of any degree of *Dhatvagni*, it could impact the process of creating the next *Dhatu*. During this process, certain metabolic byproducts called *Dhatumala* (tissue excreta) are produced. Throughout their lives, everyone is subject to the same *Dhatu* differentiation and development phenomenon. Tissue deformation could be caused by any *Avarana* (obstruction) or *Dushti* (vitiation) in specific *Srotas* (tissue microcirculation). *Ayurveda* explains some theories of tissue genesis and development (*Dhatu Pushti Nyaya*). The four primary theories are *Khale Kapota Nyaya*, *Ksheera Dadhi Nyaya*, *Kedara Kulya Nyaya*, and *Ek Kala Dhatu Pushti Nyaya*. During feeding from *Rasa* to *Shukra Dhatu*, the *Dhatvagni* of each *Dhatu* essentially divide essential materials into three divisions: *Sukshma*, *Sthula*, and *Mala Bhaga*. Organs can survive a lifetime because tissue-specific stem cells can self-renew and produce differentiated progeny.

#### Depletion of body tissues-It is explained in 17th chapter of *Charaka Samhita Sutrasthana*.<sup>[8]</sup>

1. **Rasa Dhatu Kshaya or depletion of Plasma:** The *Rasa* is the first tissue to form after food is broken down. Once the food has been digested, the substance is known as *Rasa Dhatu*. It is likened by some to blood plasma. The *Kapha Dosha* and *Rasa Dhatu* are closely related. *Rasa Dhatu* is directly impacted by variations in *Kapha Dosha*. A decrease in *Rasa Dhatu* signifies malnourishment and dehydration.<sup>[9]</sup>

The symptoms are as follows:

- *Ghattate* - patient becomes restless
  - *Sahate Shabdham Na* - Person does not stand loud sounds, becomes intolerant
  - *Hrudrava* - palpitation
  - *Hrudayam Tamyati Alpa Cheshtasya Api* - cardiac pain, exhaustion even with the slightest exertion.
2. **Rakta Dhatu Kshaya or depletion of Blood:** *Rasa Dhatu* is the source of nourishment for blood tissue; *Pitta* and *Rakta* are inseparably connected. Blood tissue is directly impacted by an increase or

decrease in *Pitta Dosha*.<sup>[10]</sup> Anaemia symptoms, which include:

- *Parusha* (roughness)
- *Sphutita* (cracks)
- *Mlana* (dullness)
- *Tvakrukshata* (dry skin)

These are brought on by the depletion of blood tissue.

**3. *Mamsa Dhātu Kshaya* or depletion of Muscle tissue:** *Rakta Dhātu* provides nutrition to muscle tissue. Limb weakness is directly caused by the depletion of muscle tissue which is caused by:-

- *Sphik, Greeva Udara Shushkata* - emaciation of the buttocks, neck and abdomen.<sup>[11]</sup>
- *Glani* - Exhaustion even without any work
- *Sandhi Sphotana* - Cracking sound in the joints
- *Akshno-Ayasa* - Tired eyes

**4. *Medo Dhātu Kshaya* or depletion of Fat tissue:** Fat tissue receives nourishment from *Mamsa Dhātu*. Absence of this leads to thinness of the body.

- *Udara Tanutva* - Thinness of the abdomen.<sup>[12]</sup>

**5. *Asthi Dhātu Kshaya* or depletion of Bone tissue:** Bone tissue has an inverse relationship with *Vata Dosha*. This implies that bone tissue loss is caused by an increase in *Vata Dosha* and vice versa. *Ayurveda* says that bone tissue is related to the teeth, nails, and moustache. Therefore, the following signs of bone tissue loss are present:

- *Kesha, Loma, Nakha, Shmashru, Dvijaprapatana* - falling of hair, nails hair of the beard including moustaches and teeth
- *Shrama* - tiredness
- *Sandhi Shaithilya* - looseness of joints.<sup>[13]</sup>

**6. *Majja Dhātu Kshaya* or depletion of Bone marrow:** According to *Ayurveda*, *Asthi Dhātu* provides nourishment for the marrow. The symptoms of *Majja* depletion as follows:-

- *Asthi Sheeryata* - Emptiness of bones

- *Durbala, Laghu Asthi* - Thinness, weakness, and lightness of the bones

- *Vata Roga* - Frequent affliction with *Vata* imbalance disorders.<sup>[14]</sup>

**7. *Shukra Dhātu Kshaya* or depletion of Semen / Female reproductive tissues:** According to *Ayurveda*, the reproductive systems of men and women make up *Shukra Dhātu*. It receives nutrition from *Majja Dhātu*. Its depletion causes the following symptoms:-

- *Daurbalya* - Weakness
- *Mukha-Shosha* - Dryness of mouth
- *Pandutva* - Pallor
- *Sadana* - Lassitude
- *Shrama* - Tiredness
- *Klaibya* - Impotency
- *Shukra-Avisarga* - Non-ejaculation of semen, nonovulation.<sup>[15]</sup>

## DISCUSSION AND CONCLUSION

*Dhatus* and *Malas* are the structural units, and *Doshas* are the energy forms. The *Dhatus* and *Doshas* are referred to as *Asrayaas* and *Asrayees*, respectively. *Dhātu* is defined as "*Sharira Dharanat Dhatvah*," or the things that provide the body with sustenance and support. Some authors claim that, from an *Ayurvedic* standpoint, the body's genesis is *Anna* - food substances that humans, animals, or those plants absorb to sustain life and growth. The body's unusual parts are eliminated through perspiration, urine, and stool, while the useful parts - also referred to as *Anna-rasa* or *Adhyarasa* - help produce and maintain the other *Dhatus*. According to *Acharaya Sushruta*, the *Shareera/body* is the "*Panchamahabhuta Vikaara Samudayatmakam*," meaning that the *Dosha, Dhatus*, and *Malas* all contribute to the building of the body's numerous organs and tissues. As a result of their unity as *Panchabhutas*, they are called "*Panchamahabhuta Vikara*." Future medical researchers might find it advantageous to reciprocally incorporate ideas from the *Dhātu-Kshaya* (depletion) *Siddhanta* of *Ayurveda*.

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