

Types of *Dhatu-kshaya* (Depletion) and its clinical significance-A Review

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Abstract - Each *Dhatu* plays a distinct duty in sustaining a healthy body, and these roles will gradually deteriorate as we get older. As people age, the quality and quantity of each *Dhatu* diminishes (*Kshaya*). It appears that stem cells are unable to express their fate in order to enter the cell cycle. According to Ayurveda, the body's tissue systems are made up of seven types of fundamental tissues called *Sapta Dhatus*. *Dhatus* (bodily tissue) are created by their nutrition, and the correct functioning of the organism is dependent on them. Beginning with *Rasa Dhatu* (primary product of digested food), followed by *Rakta* (blood tissue), *Mamsa* (muscle tissue), *Meda* (fat tissue), *Asthi* (bone tissue), *Majja* (bone marrow), and ending with *Sukra Dhatu* (reproductive fluids), *Saptadhatu*s are produced in a kind of progressive evolutionary metamorphosis. The previous *Dhatu* nourishes the next higher, and they act as the substratum for each. The constantly diminishing *Dhatus* are kept in a state of equilibrium by the food. This means that the *Dhatus* are interdependent, with an increase or decrease in one causing an increase or decrease in the other. The purpose of this review is to bring these sources together and come to a common conclusion. The paper provides a broad understanding of the concept of *Dhatu-kshaya* (depletion) and illustrates its practical application.

Index Terms - *Dhatu*, *Dhatu-kshaya*, *Dhatu Siddhanta*.

1.INTRODUCTION

Ayurveda's unique technique combines main treatment with *Rasayana* (rejuvenation) therapy to maintain health and cure diseases.¹A living organism's essential constituent part is always a functional cell. *Dhatus'* primary duties are *Sharira Dharana* and *Poshana*.²*Dhatu* means "bears" or "supports," while *Sapta* means "seven." *Ayurveda* recognises seven major tissues as supplying sustenance, growth, and structure to the entire body.³*Dhatus* are a type of tissue that, in many ways, resembles the primary tissues

discovered by modern science. From the outside, they are kept inside the confines of the skin, and from the inside, they are kept within the confines of the mucus membrane. Each *Dhatu* has an *Updhatu*, or subunit, that works together to strengthen the body,⁴ each of the three biological humours (*Doshas*) governs one of the *Dhatus*. *Updhatu* sustain and strengthen the body, but they do not nourish the body tissues like *Dhatu* do.⁵ According to *Ayurveda*, proper eating and digestion ensure optimal tissue renewal. After food has been entirely digested, tissue formation begins. *Dhatu-kshaya* refers to the loss or depletion of body tissues.⁶ Comprehending *Dhatu* and *Dhatu-kshaya* is just as crucial as understanding *Tridosha* when learning about disease processes. This review article will emphasise, assess, elaborate on, and debate *Dhatu-kshaya*.

2.AIMS AND OBJECTIVE

- To evaluate, elaborate and discuss the *Dhatu-kshaya* in view of *Ayurveda*.
- Show clinical importance of *Dhatu-kshaya*.

3.MATERIAL AND METHOD

Material related to *Dhatu-kshaya* is collected from *Ayurvedic* text including *Bahatriye*, *Laghutrye* and textbook of modern medicine respectively. The index, non-index medical journals has also referred to collect information of relevant topic.

4.LITERARY REVIEW

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

The state of equilibrium of *Tridosha*, *Saptadhatu*, and *Trimala* is the foundation of *Ayurveda's* core theory. After taking food, all of these are nourished well by the effect of individual *Jatharagni* (digestive energy) potency.⁷ Then, for sustenance, the productive nutrients (*Ahara Rasa*) are passed into each level of *Dhatu* (bodily tissues). In the end, one pool provides all of the nutrients required for the formation and development of all tissues. They transport their aid to the location where the *Dhatu*s can be found. The function of each *Dhatvagni* has an impact on the feeding of all *Dhatu*s (metabolic energy of each tissue). Each *Dhatvagni's* main job is to encourage the development of self-clones of the corresponding tissue and dependent tissues (*Upadhatus*). Each *Dhatu's Dhatvagni* also delivers the required vitamins to successive tissues, allowing them to clone more effectively. Thus, *Rasa*, *Rakta*, *Mamsa*, *Meda*, *Asthi*, *Majja* and *Shukra Dhatu*s develop sequentially and nourish further *Dhatu*s. For example, *Rasadhatvagni* plays an important role in the formation of *Rakta Dhatu* from *Rasa Dhatu* which further nourishes the *Mamsa Dhatu* by the influence of *Raktadhatvagni*. The business of producing the next *Dhatu* may be altered if the potency of any degree of *Dhatvagni* decreases or increases. Some metabolic byproducts known as *Dhatumala* are created during this process (tissue excreta). Everyone experiences the same phenomenon of *Dhatu* differentiation and development throughout their lives. Any *Avarana* (obstruction) or *Dushti* (vitiation) in distinct *Srotas* (tissue microcirculation) might result in tissue deformation. Some theories of tissue genesis and development (*Dhatu Pushti Nyaya*) are explained in *Ayurveda*. *Khale Kapota Nyaya*, *Ksheera Dadhi Nyaya*, *Kedara Kulya Nyaya*, and *Ek Kala Dhatu Pushti Nyaya* are the four main theories. *Dhatvagni* of respective *Dhatu* substantially separate key materials into three divisions, namely *Sukshma*, *Sthula*, and *Mala Bhaga*, during the feeding process from *Rasa* to *Shukra Dhatu*. Tissue-specific stem cells self-renew and generate differentiated progeny, allowing organs to last a lifetime.

4.2 Depletion of body tissues-It is explained in 17th chapter of *Charaka Samhita Sutrasthana*.⁹

Rasa Dhatu Kshaya – depletion of *Rasa*-The first tissue to form as a result of food digestion is the *Rasa*. The substance of the food is called *Rasa Dhatu* after it

has been digested. Some people compare it to blood plasma. The *Rasa Dhatu* and *Kapha Dosha* are inextricably linked. Increases or decreases in *Kapha Dosha* have a direct effect on *Rasa Dhatu*. Decrease of *Rasa Dhatu* indicates dehydration, and lack of nutrients.¹⁰

The symptoms are –

- *Ghattate* -patient becomes restless,
- *SahateShabdham Na* – he does not stand loud sounds, becomes intolerant;
- *Hrudrava* – palpitation,
- *HrudayamTamyatiAlpaCheshtasyaApi* – cardiac pain, exhaustion even with the slightest exertion. All these symptoms can be correlated with the symptoms of dehydration / lack of nutrition.

Rakta Dhatu Kshaya – depletion of *Rakta* (blood) – *Rasa Dhatu* is the source of nutrition for blood tissue. *Rakta* and *Pitta* are inextricably linked. *Pitta dosha* increase or decrease has a direct effect on blood tissue.¹¹

Depletion of blood tissue causes symptoms of anaemia, which are explained as –

- *Parusha* – Roughness,
- *Sphutita* – cracks,
- *Mlana* – dullness,
- *TvakRukshata* – skin dryness.

Mamsa Dhatu Kshaya – depletion of muscle tissue – Muscle tissue gets its nutrition by *Rakta Dhatu*. Depletion of muscle tissue directly causes weakening of limbs and causes *Sphik*, *Greeva Udara Shushkata* – emaciation of the buttocks, neck and abdomen.¹²

Medo Dhatu Kshaya – depletion of fat tissue – *Mamsa Dhatu* provides nutrients to fat tissue. Thinness of the body is caused by a lack of this.

- *Sandhi sphutana* – cracking of the joints,
- *Glani* – Lassitude,
- *AkshnoAyasa* – tired eyes,
- *Udara tanutva* – thinness of the abdomen.¹³

Asthi Dhatu Kshaya – depletion of bone tissue – *Vata Dosha* is inversely connected to bone tissue. This suggests that an increase in *Vata Dosha* leads to bone tissue loss and vice versa. Teeth, nail, and moustache are all related to bone tissue, according to *Ayurveda*.

Hence, depletion of bone tissue exhibits the following symptoms. –

- *Kesha, Loma, Nakha, Shmashru, Dvijaprapatana* – falling of hair, nails hair of the beard including moustaches and teeth,
- *Shrama*– tiredness,
- *Sandhi shaitilya* – looseness of joints.¹⁴

Majja Dhatu Kshaya – depletion of bone marrow –As per *Ayurveda*, marrow gets its nourishment by *Asthi Dhatu*. depletion of *Majja dhatu* causes –

- *AsthiSheeryata* – emptiness of bones,
- *Durbala, Laghu Asthi* – thinness, weakness, and lightness of the bones,
- *VataRoga* – frequent affliction with *Vata* imbalance disorders.¹⁵

Shukra Dhatu Kshaya – depletion of semen / female reproductive tissues –As per *Ayurveda*, *Shukra Dhatu* comprises of male and female reproductive system. It gets its nourishment by *Majja Dhatu*.

Its depletion causes –

- *Daurbalya* – weakness,
- *MukhaShosha* – dryness of mouth,
- *Pandutva* – pallor,
- *Sadana*– lassitude,
- *Shrama*– tiredness,
- *Klaibya*– impotency and
- *ShukraAvisarga* – non-ejaculation of semen, non-ovulation.¹⁶

5.DISCUSSION AND CONCLUSION

The structural units are *Dhatus* and *Malas*, while the energy forms are *Doshas*. *Asrayees* and *asrayaas* are the names given to the *Doshas* and *Dhatus*, respectively. *Dhatu* is defined as "*Sharira DharanatDhatvah*," or those that nourish and support the body. According to certain authors, the body's genesis is anna from an *Ayurvedic* perspective (food substance that the people or animals eat or drink or those plants absorb to maintain life and growth). According to the metabolism process, the dietary material is split into two components after digestion: beneficial and uncommon parts. Unusual parts of the body are expelled through sweat, urine, and stool, while useful parts are known as *Anna-rasa*, or *Adhya-rasa*, which aids in the production and sustenance of

the body's other *Dhatus*. The *Shareera/body* is the "*Panchamahabhutavikaarasamudayatmakam*," according to *Acharaya Sushruta*, which indicates that the *Dosha*, *Dhatus*, and *Malas* all contribute to the construction of the body's many organs and tissues. Because they are all made up of *Panchabhutas*, they are referred to as "*Panchamahabhutavikara*." Future medical researchers may benefit from the reciprocal inclusion of concepts from *Ayurveda's Dhatu-kshya* (depletion) *Siddhanta*.

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