

## Concept of *Updhatu* In *Ayurveda*

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### ABSTRACT

Ancient seers of *Ayurveda* have classified the elements of the body under three fundamental components *Dosha* (biological entities), *Dhatu* (tissue entity) and *Mala* (waste products). The equilibrium of these entity is very necessary for the longevity and healthy life of individuals and thus to achieve the main goal of *Ayurveda* i.e. maintenance of the health of a healthy person. For the existence of body, two elementary factors are there, one that forms the structural configuration and second which controls the physiological aspects. *Dosha* and *Mala* are the principal physiological entities, not structural. The basic structural architectures of the body are formed by *Dhatus*. *Upadhatus* are the sub-tissues or secondary tissues in the body and are derived from the *Dhatus*, which serve as important components and have certain fixed functions to render. This doesn't mean that the *Upadhatus* would render the same job of their mentor *Dhatu*. They are related to the main *Dhatu*, but have specially designated functions of their own. References about *Upadhatus* are very less in *Ayurvedic* literature. In this review article, an effort has been made to collect the information regarding the concept of *Updhatus* which are scattered in *Ayurvedic Samhitas*. Thus, the basic concept of *Updhatu* and various *Updhatus* mentioned by different *Acharayas* has been recollected in this article.

**Key words:** *Dhatu, Gativivarjitam, Prajayate, Updhatu.*

### INTRODUCTION

*Ayurveda* is the first systematically written record of medicine of the world and it incorporates all aspect of human life. The main aim of *Ayurveda* is to provide guidelines for maintenance and promotion of health as well as prevention and then treatment of diseases. Homeostasis of *Dosa* (biological entities responsible for body functioning and its regulation), *Dhatu* (tissue entities) and *Mala* (waste products),<sup>[1]</sup> is called health.<sup>[2]</sup> All ancient *Acharyas* have elaborated thoroughly that it is homeostasis of *Dosha*, *Dhatu* and *Mala* that preserves health and life.<sup>[3]</sup>

Those which adorn or wear the body are called *Dhatus*. *Dhatus* or tissues make up the physical composure of the body; they form the structure of the body and are hence the building blocks. *Dhatu* form the substratum, which bear and nourish other constituents of the body. Even though the basic elements are categorized under these three groups i.e., *Dosa*, *Dhatu* and *Mala*,

some elements are left out which were not defined. Ancient seers found it difficult to attribute their functions to the group of *dhatu*s. Hence, they further defined specialized groups of entities termed as *Upadhatus* (sub tissue). *Upadhatus* consists of two parts prefix 'Upa' and the word 'Dhatu'. *Upa* is explained as 'vicinity' to something. So, in nutshell, it can be explained that *Upadhatus* is derivative of *Dhatu* and has some resemblance in terms of structure, function and nature. They are important physiological units and engaged to design the structural composition of the body.<sup>[4]</sup> *Dhatu* form the basic structure of the body, they are not able to execute the functions of body without the support of *Upadhatus*. *Upadhatus* act as a bridge between these fundamental entities. *Upadhatus* are also involved in emergence of diseases and the knowledge is necessary to understand the pathological conditions.

#### Aim of this study

To bring together all the references regarding *Updhatus* in *Ayurveda*, so as to promote its generalized understanding.

### MATERIALS AND METHODS

Descriptions regarding *Updhatu* were collected from *Samhitas*, other standard *Ayurvedic* literatures and recent research papers

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related to it. Research papers and articles were also searched online from scientific electronic databases.

## REVIEW AND DISCUSSION

### Nirukti (Origin of the term)

Which supports the growth of the body is termed as *Dhatu*.<sup>[5]</sup> *Dhatu*s are those stable constituents which form the basic elements of the body and make the body exist. When *Upa* is a prefix attached to the word *Dhatu*, it is called as *Updhatu*.<sup>[6]</sup> The literary meaning of *Upa* is towards, resemblance, etc. means subordination and inferiority. Hence the word *Upadhatu*.<sup>[7]</sup> *Upadhatu*s are evolved from *Dhatu*s,<sup>[8]</sup> and are produced along with *Dhatu*s.<sup>[9]</sup> Thus those, which are derivatives of *Dhatu*s, produced at complementary level, are known as *Upadhatu*s.<sup>[10]</sup>

### Chronology in the description of Updhatu

#### 1. In the Vedas:

References regarding *Updhatu* are found in *Vedas*, but in scattered manner. The number of *Asthi* (bones), *Sandhi* (joints) and their types i.e. *Chala* (movable joints) and *Achala Sandhi* (immovable joints) are quoted in *Rigveda*. *Atharvaveda* describes the structure of *Sandhi* and their specific position in the body. '*Hira*' is the word used for *Sira* (vein) and their number is mentioned to be thousand. '*Lohitavarna*' word has been used for *Sukshma Sira* (venules) While describing *Kustha* (leprosy) references of *Twak* (skin) are found, where term *Charma* is used for that. The references of '*Rajovahi Nadya* (uterine nerves) and *Snayu* (ligament) are found and *Vasa* (adipose/fat) is quoted by the name of *Vapa*.<sup>[11]</sup>

#### 2. In the Samhitas: [Table 01]

**Table 01: Updhatu** quoted by different *Acharyas*

Name of <i>Acharyas</i>	Name of <i>Upadhatu</i> s Mentioned	Numbers
Charaka,,Gayadasa, Chakrapani	<i>Stanya, Raja, Kandara, Sira, Vasa, Twak, Snayu</i>	07
Vagbhata, Dalhana	<i>Stanya, Raja, Kandara, Sira, Vasa, Twak, Snayu, Sandhi</i>	08
Sharnagadhara, Bhavamisra, Trimalla Bhatta	<i>Stanya, Raja, Vasa, Sweda, Danta, Kesa, Oja</i> (essence of all <i>Dhatu</i> s)	07
Bhoja	<i>Stanya, Raja, Sira, Twak, Snayu</i>	05

It has been described in different ways, e.g. that which is similar or identical to *Dhatu* is an *Updhatu*,<sup>[12]</sup> elements of body which are not subjected to any transformation are *Updhatu*; <sup>[13]</sup> structural elements that support the body and not nourish it are *Upadhatu*s.

In *Samhita* period, *Charaka Samhita* was the first who had elucidated *Upadhatu*s collectively in one knot. *Sushruta* has given the description of the *Updhatu* components separately but not as a unit. In this regard, *Acharya Bhoja* has mentioned only five components of this unit- *Sira, Snayu, Raja, Stanya* and *Twak*. He has named this unit as *Updhatu*. *Ashtanga Sangraha* has

mentioned these components under '*Prasadaja*' (pure) elements. While elucidating the *Anjali Pramana* (measurement of liquid by joining both the hands) of body elements *Acharya Vagbhat* has considered *Rajah* and *Stanya* as the two different entities.<sup>[14]</sup> *Ashtanga Hridayakar* has not mentioned these components collectively anywhere and also not used the term *Updhatu*. Also the commentators of *Ashtang Sangraha* and *Ashtang Hridaya* have not described these components as *Updhatu*. In *Madhya Kala*, the commentator *Chakrapani* and *Dalhana* have elaborately explained the *Updhatu* concept.

### Characters of Updhatu

*Dhatu* related *Upadhatu*s are *Rasa* (plasma,lymph tissue)- *Stanya* (milk), *Raja*(menstrual-blood/ovum), ; *Rakta* (formed elements of blood)- *Kandara* (tendon), *Sira*; *Mamsa* (muscle tissue)- *Vasa, Twak*; *Meda* (adipose tissue)- *Snayu, Sandhi*. First four *Dhatu*s are related with *Upadhatu*s.<sup>[15]</sup> *Dalhana* in *Sutra Sthana* elucidates the reason behind this in the context of nourishment of *Dhatu*.<sup>[16]</sup> *Acharya Sushruta* has specified the term '*Prajayate*'(emerge from) for the first four *Upadhatu*s only. *Dalhana* has clarified that to specify the distinct function of these *Dhatu*s, the term '*Prajayate*' is used for them. Further he explained that we cannot find out the cause behind this, the only logic being '*Swabhava* (naturally occurring). At complementary or secondary level, *Upadhatu*s are produced from *Dhatu* metabolism, the word '*prajayate*' indicating that they are the byproduct of *Dhatu* metabolism.

*Chakrapani* has stated that as they do not have the function of nourishing the *Dhatu*s and they do not get transformed into further components. *Acharya Bhoja* has explained this character of *Updhatu* as '*Gativivarjita* (lack of movement).<sup>[17]</sup> Commentator *Sivadasa Sen* further explored the meaning of this term as that *Updhatu* do not have any action to nourish the successive *Dhatu*s. They have *Sarira Poshakatv* (provide nutrition to the body) character, but *Chakrapani* specifies that even though *Updhatu* do not nourish *Dhatu*, they nourish other components of the body. To understand the precise concept of *Upadhatu*s and their role in body physiology, it is necessary to know the characters of related *Dhatu*s on the basis of which *Upadhatu*s are described in classics [Table 02].

**Table 2: Dhatu** and their emerging *Updhatu* according to different *Acharyas*<sup>[18]</sup>

S. N.	<i>Dhatu</i>	<i>Updhatu</i> s			
		<i>Ashtanga Sangraha</i>	<i>Sushruta Samhita</i>	<i>Charaka Samhita</i>	<i>Sharangdhara</i>
1.	<i>Rasa</i>	No.	<i>Stanya, Artawa</i> (Su. Su.,14/6)	<i>Stanya, Artawa</i>	<i>Stanya,</i>
2.	<i>Rakta</i>	<i>Kandara, Sira</i>	No.	<i>Kandara, Sira</i>	<i>Artawa</i>
3.	<i>Mnsa</i>	<i>Vasa, Twacha</i>	<i>Vasa</i> (Su. Sa.4/13)	<i>Vasa,ShadTwacha</i>	<i>Vasa</i>
4.	<i>Meda</i>	<i>Snayu, Sandhi</i>	<i>Sira, Snayu</i> (Su. Sa.4/29)	<i>Snayu</i>	<i>Sweda</i>
5.	<i>Asthi</i>	No.	No.	No.	<i>Danta</i>
6.	<i>Majja</i>	No.	No.	No.	<i>Kesha, Loma</i>
7.	<i>Shukra</i>	No.(A.S.Sha.-6)	No.	No.(Ch.Chi.15/18)	<i>Oja</i> (Sha. Pu. 5/15-16)

**View of Sharngadhara:** Sharngadhara has given some different opinion about the concept of Updhatu. He had introduced a modified version of Updhatu. [19] Sharngadhara has described *Stanya, Raja, Vasa, Sweda, Danta, Kesa, and Oja* as Updhatu. Acharya Bhavamisra has also agreed with the opinion of Sharngadhara. [20] Sharngadhara has not mentioned *Kandara, Sira, Twak, Snayu, and Sandhi*. Instead of these, he added *Sweda, Danta, Kesa* and *Ojas* to the list of Updhatu. All the seven Dhatus are mentioned in relation with Upadhatus.

**a. Sweda:** Charaka and Susruta have referred it under 'Dhatu Mala' (Mala of Medo Dhatu) of the body. Acharya Sarngadhara and Bhavamisra have mentioned it under Updhatu and Dhatu Malas also. [21,22]

**b. Danta:** Ancient Acharyas have not mentioned Danta (teeth) under Updhatu. Chakrapani has added that Danta receives its nutrition from Mala portion of Asthi Dhatu. Danta is included under Asthi by Charaka. Susruta has termed it as 'Rucakasthi' (a type of bone)

**c. Kesa:** Charaka and Astanga Sangraha-kara have included Kesa (hair), under Dhatu Mala. Sarngadhara had mentioned it as an Updhatu of Majja (bone marrow).

**d. Oja:** It is essence of all the Dhatus starting from Rasa to Sukra (reproductive tissue). [23,24] Chakrapani has quoted few statements in this regard. [25, 26] Some opine it as eighth number of Dhatu. In this context one statement supports the view of Sarngadhara which considers the Ojas as Updhatu. The reason behind this is explained that like other Dhatus though it sustains the body, but does not nourish it. Acharya Bhavamisra in this context states this entity as an essence of all the Dhatus. [27]

### Physiology of formation of Upadhatus

Dhatu metabolism is a nourish mechanism of all the body constituents. Through this pool all elements including Upadhatus get their nourishment. Upadhatus are sustained being fed by their nourishing factor. Food after digestion takes two forms i.e. the Prasadaja part (essence) and the Kitta (waste) part. Depending upon their nourishment from Prasadaja or the Kitta, the tissue elements of the body are described of two types, the pure one 'Prasadakhya' and waste product 'Malakhya'. From Prasadaja portion all the Dhatus are formed in progressive order. Upadhatus are also nourished from this Prasadaja part. Ahara Rasa when goes to the abode of one Dhatu after the action of that particular Srotasagni (biological fire within the channels) it gets transformed into two parts Prasadaja and Kitta. Prasadaja portion is further divided into two parts. The main portion of it provides nourishment to that Dhatu and the subtle portion is meant to provide nourishment to the two elements by its further division. The major portion of it goes to the site of next Dhatu and the subtle of it provides nourishment to the Updhatu. Third waste portion nourishes the Mala of the respective

Dhatu. In this way, from the Prasadaja part of Ahara Rasa Upadhatus derive their nourishment in progressive order.

### Emergence of Updhatu

Emergence of all the body constituents takes place at embryological stage. [28] While commenting on the reference regarding the nourishment of Dhatu, Chakrapani has clearly mentioned that all the Dhatus manifest during gestational period itself. [29] Their further nourishment is achieved by Dhatu metabolism. Vagbhat has clearly explained the emergence of Updhatu in 'Garbhavakranti' Sarira as follows- [30]

During sixth month of gestational period emergence of Snayu, Sira and Twak takes place. The characters, which are present since birth, are termed as 'Nitya Bhav' (hereditary entity). All the Dhatus and Upadhatus are termed as 'Nitya Bhava' of the body. Updhatu Raja and Stanya are exceptions for this, since they emerge few years after birth and also not continue throughout the life. Such entities are called as 'Anitya Bhava' (acquired entity).

### CONCLUSION

Though the entities of Updhatu were known since many years before, Acharya Charaka first started using the terminology. Upadhatus are mentioned along with Dhatus. They are related with Dhatus in a very specific manner. Upadhatus do not nourish any successive Dhatu, but they nourish other constituents of the body. Sharngadhara has introduced a modified version of Updhatu. Condition of Updhatu depends upon the status of Dhatvagnis. Their central role in the physiology of Updhatu formation has also been explained. Bhutagni (a type of biological fire, related to five element) plays an important role to derive final Bhautika (physical) molecular configuration of the components. Some Upadhatus also act as a physiological entity. Others are principally involved in anatomical configuration of human body. Normal functioning of Updhatu is directly concerned with the status of Dhatvagni (a type of biological fire act in Dhatu /tissue level) Bhutagnis are present at Updhatu level. They supervene final molecular configuration of nutrients homologous to Upadhatus.

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