



Original Article

## A LITERATURE REVIEW OF UPADHATU AND ITS CLINICAL IMPORTANCE

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### Abstract

Dosha, Dhatu and Malas are the principal components of human physiology. Existence of life and continuation of health is subjected to the status of these three components. Dhatus are responsible to frame the basic structural architecture of body. They are most stable components of the body.

Ancient seers have further defined a specialized group of elements termed as Upadhatu. They found it difficult to attribute their functions to Dhatu. 'Upadhatu' are derivative of Dhatu and has some resemblance with Dhatus in terms of structure, function and nature. They too are important physiological units and radically engaged to design the structural architecture of the mortal. Their function commences since embryological development of humans. Upadhatu are also involved in emergence of many diseases. Thus complete knowledge of upadhatu is necessary for maintenance of health, to diagnose various pathological conditions and to finalise the treatment modalities for diseases. Though they exhibit a pivotal role in maintaining health and act as an important component in many pathological conditions, knowledge about Upadhatu is in scattered form and enfolded in Sutras.

In the present study Upadhatu were studied with multiple angles. Opinion of various Acharyas was studied regarding the total number of Upadhatu. Relation with concern Dhatus, Doshas and Rogamargas were explored. Study also illustrates the physiology of Upadhatu formation and their nourishment after formation. This information helps us while treating the Upadhatu related disorders. Involvement of Upadhatu like Sira, Snayu and Kandara in pathogenesis also indicates bad prognosis. A sincere effort has been taken to explore this knowledge on the basis of available literature to know more about Upadhatu. Research should continue in this field to practically establish the conceptual findings.

**Keywords:** Upadhatu, Srotasa, Bhutagni, Sira, Snayu, Kandara, Sandhi, Rogamarga, Marma,

### INTRODUCTION

In Vedas the references of Upadhatu are found in dispersed manner. Charak Samhita is the first ancient text which has mentioned Upadhatu collectively as a one

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unit<sup>i</sup>. Commentator Chakrapani and Dalhana have contributed significantly to explain the concept of Upadhatu. Acharya Charak has mentioned seven components as Upadhatu. Vriddha Vagbhata has added Sandhi to the list. Commentator Dalhana has mentioned total eight components as Upadhatu.

Further the seer of medieval period Sharngadhara, stands differently while enlisting this unit of Upadhatu. Revered oracle has enlisted Stanya, Raja, Vasa, Sweda, Danta, Kesha, and Oja as unit of Upadhatu.<sup>ii</sup>. Acharya Bhavamishra has accepted Sharngadhara School of thoughts.

**Table - I Upadhatus quoted by various Acharyas-**

Name of Revered Acharya	Names of the Upadhatus Mentioned	Total number of Upadhatus
Bhoja	Stanya, Raja, Sira, Twak Snayu.	5
Charaka; Gayadasa; Chakrapani	Stanya, Raja, Kandara, Sira, Vasa, Twak, Snayu.	7
Vriddha Vagbhata; Dalhana	Stanya, Raja, Kandara, Sira, Vasa, Twak, Snayu, <u>Sandhi</u>	8
Sharngadhar a; Bhavamishra ; Trimalla Bhatta (Y.T.)	Stanya, Raja, Vasa, <u>Sweda</u> , <u>Danta</u> , <u>Kesha</u> , <u>Oja</u> .	7

#### Etymology:

- The word 'Upadhatu' consists of two parts i.e. Prefix "Upa" and the word "Dhatu".
- The literary meaning of "Upa" is towards, near to, nearness, with the idea of subordination and inferiority<sup>iii</sup>.
- That shows close resemblance towards Dhatu<sup>iv</sup>.

Those, which are derivatives of Dhatus, produced at complementary, subsidiary level, are known as Upadhatus<sup>v</sup>.

#### *Characteristics Features of Upadhatu:*

Acharya Charaka has enlisted the Upadhatus in correlation with Dhatus<sup>vi</sup>. The specific relationship has mentioned in table.

**Table – II The specific correlation of Dhatus with Upadhatus**

Dhatu	Related Upadhatus
Rasa	Stanya, Raja
Rakta	Kandara, Sira
Mamsa	Vasa, Twak
Meda	Snayu, Sandhi (Dalhana)

Classics have explained the concept of Upadhatu in correlation with Dhatu. Upadhatus are derived from Dhatus. First four Dhatus (Rasa, Rakta, Mamsa and Meda) are related with Upadhatus.

Upadhatus are byproducts of Dhatu metabolism, but they are produced at subsidiary level. Upadhatu do not nourish

successive Dhatu or Upadhatu. Since they have no fate to get transformed into further components, Acharya Bhoja has referred this feature as "Gativivarjita"<sup>vii</sup>. Dhatus bear the body elements. The function of Upadhatus is supportive to Dhatus. Upadhatus like Raja & Stanya functions for specific time period only and is supportive to reproduction. Raja & Stanya are excretory in nature & act as 'Mala Bhava' (excretory product) for the body if not expelled after specific time period.

### **Utpatti (emergence) of Upadhatu:**

Emergence of all the body constituents takes place at embryological stage<sup>viii</sup>. Chakrapani has clearly mentioned that all the Dhatus manifests during gestational period itself<sup>x</sup>. Their further nourishment is achieved by Dhatu metabolism. Revered seer Laghu Vagbhata has stated that during sixth month of gestational period emergence of Snayu, Sira and Twak takes place<sup>x</sup>. The characters, which are present since birth, are termed as "Nitya Bhava." All the Dhatus and Upadhatus are termed as "Nitya Bhava" of the body. Upadhatu Raja and Stanya are exception to this, since they emerge few years after birth and also do not continue throughout the life. Such entities are known as "Anitya Bhava".

### **Physiology of Upadhatu formation-**

Dhatu metabolism is a nourishing pool of all the body constituents. Through this pool all elements including Upadhatus derive their nourishment. Revered seer Charak explains metabolism process behind this<sup>xi</sup>. Upadhatu are sustained being fed by their nourishing factor. Food after digestion takes two forms viz. the Prasadaja (essence part) and the Kitta (excretory part)<sup>xii</sup>.

Depending upon the type of nourishment, tissue elements are classified in two types, "Prasadakhya" and "Malakhya". The essence part nourishes all the Dhatus in progressive order. Upadhatu are also nourished from this essence part.

Aahara Rasa once goes to the abodes of one Dhatu, by the action of related Srotasagni it is transformed into two parts namely Prasadaja and Kitta. Prasadaja portion further divides into two parts. The main portion of it provides nourishment to the concerned Dhatu and the subtle portion (Sukshma Bhaga) is meant to provide nourishment to two elements, by its further division. The major portion of it goes to the site of next Dhatu and the subtle portion of it provides nourishment to the Upadhatu. The waste part nourishes the Mala of the respective Dhatu. In this way from the essence part of Aahara Rasa Upadhatus derive their nourishment in progressive order.

In this way when Aahara Rasa comes to the abodes of Rasa Dhatu, by the action of Rasadhatvagni it gets metamorphosed and divided into two parts namely essence portion and the excretory portion. The essence part again divided into two parts Sthula and Sukshma. Sthula portion of it supplies nourishment to the Rasa Dhatu and Sukshma portion of it again divided into two parts. The major portion of it goes to the abodes of Rakta Dhatu and subtle part provides nourishment to Stanya and Raja. In the same manner the subsequent Upadhatus are derived from their respective Dhatus.

The process of Dhatu metabolism goes on incessantly like the passage of time (*Kaalavat Anavasthitatva*). If Dhatvagni, Vayu and Srotasas are unimpeded, they play a pivot role in continuation of Dhatu metabolism. These components are closely related with nourishment of Upadhatus too.

#### **1) Importance of Vayu: -**

i) Illumination (Sandhukshana): Vayu is responsible to maintain the normal status of Dhatvagnis<sup>xiii</sup>. In classics Vayu is mentioned as "Agnisakhaa". It illuminates the Dhatvagnis<sup>xiv</sup>.

ii) Separation (Vivechana):

Vayu is responsible for appropriate allocation of nutritional material to every element of the body.

iii) Conveyance (Gati):

Nutritional need of each element is transported to its abode by the action of Vayu. Upadhatu receives their specific nutrients from Rasadi Dhatus by the action of Vayu<sup>xv</sup>.

2) **Importance of Srotasa:-**

Srotasa play an important role in Dhatu metabolism. They are the channels of transportation and transformation.

"Parinaama Apadyamana Dhatus" means those Dhatus which are under the process of transformation from their previous status, Srotas conveys such Dhatus from the abodes of previous Dhatu to successive one<sup>xvi</sup>.

The former Dhatu nourishes successive one. For this purpose transformation is necessary which supervene at the level of Srotasa. The transforming nutrients are conveyed through these channels. All the structural entities are having their separate channels of transportation. Tissue elements are situated in different parts of the body, so each of them should have separate Srotasa to carry their particular nourishment. One canal cannot irrigate trees situated in different places. The same principle is applied to the nourishment of body elements. After separation of nutrients of Upadhatu, Srotasas are necessary to convey these nutrients to respective Upadhatu.

Classics have not clearly mentioned the Srotasas for all the Upadhatu. Acharya Sushruta has mentioned Stanyavaha and Aartavavaha Srotasa in respective context. One principle is stated by revered oracle Chakrapani to understand the knowledge about unexplained Srotasa.

*"Jyanavanto Hi Anena Lingen Anuktam Api Sroto Anumiyate |" [C.Vi. 5/6-7 – Chakrapani]*

This reference supports the view that for nourishment of Upadhatu there exist separate Srotasa.

While explaining the concept and important role of Srotasa in Srotoviman, Acharya Charaka has clearly mentioned that Srotasa is essential for every transformation. Every component of the body requires its own Srotasa for emergence and further nourishment<sup>xvii</sup>. Commentator Chakrapani specifically enumerated that metamorphosis phenomenon distinctly supervenes at the level of Srotasa. This suggests that Agni which is concerned with Dhatu metabolism resides at Srotasa<sup>xviii</sup>.

3) **Importance of Dhatvagni & Bhutagni :-**

Dhatvagni plays a principle role in the formation of Upadhatu. Status of Dhatvagni inevitably affects status of Upadhatu. Transformation process of Upadhatu is elucidated up to the level of Dhatvagni only. Further transformation is not explained anywhere in the classics. Commentator Chakrapani has stated the evidence suggesting action of Agni at the level of Upadhatu.

He has clearly mentioned that Agni which functions at Upadhatu and Mala level, is a type of Bhutagni<sup>xix</sup>. Thus knowing the role of Bhutagni explained by Acharyas, one could assess its function at the level of Upadhatu also.

At the level of Upadhatu, after the action of Bhutagni no further residue forms. Upadhatu are the final product of metabolism. They do not nourish successive Dhatu or Upadhatu. They are the finalized forms. "Sneha Dhatu Parampara" which manifests at Dhatu level is not observed in case of Upadhatu. They are motionless, final products of Dhatu metabolism. In this way all the Upadhatu receives their nourishment from Dhatu metabolism.

**SPECIFIC FEATURES AND CLINICAL IMPORTANCE OF EVERY UPADHATU-**

**STUDY OF SPECIFIC UPADHATUS**

**1) Upadhatu Raja & Stanya:**

Raja & Stanya are present only in females. They are derived by means of specific function attributed to female physiology i.e. reproduction. They are called

as Upadhatus because they derive their nourishment from Prasadaja portion of Dhatus.

Both the entities are present in liquid state. Raja nourishes developing embryo during gestational period and Stanya nourishes infant for specific period of time. These two entities are functional one.

These two entities are excretory in nature. After certain period they are to be expelled from the body, otherwise they function as Mala and will be pathological for body.

#### STANYA–

During pregnancy developing embryo receives nourishment through feto-maternal nourishing pool (placenta). After parturition that pool vanishes. Then after the maternal circulation is averted towards breast, where the essence part of Rasa transformed into Stanya which provide nourishment to the neonate still his digestive system will developed to digest the outside food material.

Great sages have stated that the lactation should continue till dentition in children<sup>xx</sup>. Dentition is the indication of development of digestive system along with improved status of Agni. Agni is now capable to digest light and anabolic cereals. As the infant grows, requirement of the Dhatus increases. Developing Dhatus need additional nourishment than they receive it from the breast milk. Acarya Sushruta has also mentioned the period to start the supplementary food as sixth month<sup>xxi</sup>.

#### 2) KANDARA-

##### Utpatti-

Kandara are known as a type of Snayu<sup>xxii</sup>, hence their emergence analogues with Snayu. They are emerged from sneha of Medodhatu, which is conveyed by Vayu and by the action of Agni results into Kandara<sup>xxiii</sup>. After accomplishment, the further nourishment of Kandara is derived from Rakta Dhatu.

##### Characteristic features of Kandara-

Kandara are Vritta (round in shape), Sthula (gross structure), Sthira (stable) and Murtimad (specific form). This indicates

dominance of Prithvi Mahabhuta in this entity<sup>xxiv</sup>. It is stout, condensed and tough structure.

Acharya Charaka states that they are placed where the bonding between joints of bones is required. Acharya Sharngadhara opines that Kandara is responsible for endurance of various movements. It supports to bear the body weight. It provides strength to the local architecture. It bounds the articulating structures.

##### Clinical significance-

Kandara are involved in the pathogenesis of following diseases: Khanja, Gridhrasi, Pangu, Vishwachi. The diseases of Kandara falls under Madhyam Roga Marga<sup>xxv</sup>.

#### 3) SIRA- Utpatti –

Sira are spread all over the body. Through these channels Rasadi elements are flowing from one place to another<sup>xxvi</sup>.

Vayu is responsible for structural configuration and placement of various organs in the body<sup>xxvii</sup>. This spurred Vayu by receiving Sneha of Meda converts them into Sira and Snayu. Though the 'Upadana Karana' (proximate cause) for both the structure is same, final configuration differs due to action of Agni. During transformation when the action of Agni is for short duration i.e. Mridu Paka results in formation of Sira<sup>xxviii</sup>. Due to continuous contact of Rasa, Sira are Mridu in nature<sup>xxix</sup>.

##### Characteristic features of Sira–

Sira are Mrdu in nature. They are Chala (unsteady) in nature<sup>xxx</sup>. They are mentioned under Pitruja Bhava<sup>xxxi</sup>. There observes dominance of Akash Mahabhuta. Depending upon the predominance of Dosha, Sira are having Aruna, Nila, and Gaura Varna. Laxity or sturdiness of the wall of Sira is depending upon the quantity of Rakta traversing through it. Hence during Raktaksaya condition Sira Saithilya is observed. Sira possess constrictor and dilatory property<sup>xxxii</sup>.



They receive their nourishment from Rakta Dhatu. Raktadhara Kala essentially found in Sira, Yakrita and Pliha, which are mentioned as principal sites of formation of Rakta<sup>xxxiii</sup>. Kala are nourishing in nature.

#### Functions of Sira-

Sira provide substratum for the functions of Tridosha. Vatahara Sira provide substratum for functions of Vata Dosha. That is why Acharya Susruta has mentioned that Vatahara Sira performs all the functions of Buddhi<sup>xxxiv</sup>. Pitta Dosha through Pittavaha Sira brings luster to the body, increases appetite, maintains normal health<sup>xxxv</sup>. Kapha Dosha traversing through kaphavaha Sira causes lubrications of various parts of the body and produces firmness in the joints. It also improves the strength & does all the functions allotted to it<sup>xxxvi</sup>. The Raktavaha Sira nourishes the Dhatu, improves the complexion, and causes a definite perception of Sparsa (touch).

Sira provides substratum for transportation of "Jiva Rakta." So any type of injury to Sira may be fatal. From the injured Sira abundant quantity of blood flows out which triggers many disorders<sup>xxxvii</sup>.

#### 4) VASA-

##### Utpatti –

Vasa is a type of Sneha distinctly present in muscles. Vasa is derived from essence of Mamsa Dhatu<sup>xxxviii</sup>. It is nothing but the extract of Mamsa Dhatu. There are three types of Sneha located at various places in the body. They are Majja, Meda and Vasa. Majja is a type of Sneha, which is placed in bones. Meda is mainly placed in between the layers of abdomen and in subcutaneous tissues<sup>xxxix</sup>.

#### Characteristic features of Vasa-

Due to Dominance of Aapya Mahabhuta Vasa possesses the properties like Drava (liquid), Sandra (viscid), Manda (sluggish), Snigdha (unctuous), Mrdu (soft /mushy), Picchla (sticky)<sup>xl</sup>. Kapha Dosa resides at Vasa. Pramana of Vasa has three

Anjali in normal person. The measurement described here pertains to the ideal standard.

#### Functions of Vasa-

1. Snehana- Vasa is a lubricant for the body tissues.
2. Varnya- It adds complexion.
3. Brmhana-It nourishes other tissue of the body.
4. Balya- It strengthens the tissues.
5. It alleviates the Vata Dosa.

Vasa is described as a type of animal Sneha. The characters of Vasa Sneha as described by classics similitude with Majja<sup>xli</sup>. Along with above mentioned properties it is aphrodisiac in nature.

#### 5) TWAK –

##### Utpatti –

Viriddha Vagbhata has asserted that Rakta Dhatu plays principle role in manifestation of Twak (skin). Commentator Indu has elucidated that metamorphosis of Rakta by its own Ushma (Agni) results in accomplishment of all the layers of skin<sup>xlii</sup>.

Skin is mentioned as Upadhatu of Mamsa by all the seers except Sharngadhara. Annotator of Sharngadhara Samhita has mentioned Twak as "Mamsa Mala." Nourishment of the skin is achieved through essence of Mamsa Dhatu<sup>xliii</sup>. Organs of the body like Sira, Snayu, Asthi, Sandhi etc. are covered by Mamsa Peshi, similarly skin mantles the whole body. Aacchadana Karma (covering) of skin is identical with Mamsa Dhatu.

#### Characteristic features of Skin -

Due to dominance of Prithvi Mahabhuta skin restores the properties like Sthula (gross), Sthira (stable) and Murtimad (having specific form) while Mrdu (soft) and Snigdha (luster) properties indicates the presence of Aapya Mahabhuta. Sparshana property (tactile sensation) of it is indicative of Vayu Mahabhuta<sup>xliv</sup>. Essence

Skin is a Maatruja Avayava. Saarata of Rakta Dhatu is characterized by unctuousness, red colour and beautiful dazzling appearance of the ears, eyes, face, tongue, nose, and lips, sole of the hands and

feet, nails and forehead. All these characters are observed on skin. It comes under Baahya Roga Marga. It is narrated as Mulasthana (origin) of Mamsavaha Srotasa<sup>xlv</sup>. Lomakupas (pores of the skin) are the Mulasthana of Swedavaha Srotasa which opens on the skin. Mala (excretory part) of Majja Dhatu maintains unctuousness of the skin<sup>xlvi</sup>.

### Relation with Dosha:-

Bhrajaka Pitta is mainly related with skin. Characters like luster, colour and reflected shadow of the skin are attributed by Bhrajaka Pitta. Skin is the main platform for various functions of Vayu.

### Functions of Skin-

- 1) Skin covers the whole body, thus protect it from various foreign materials.
- 2) Indriya Adhithana - It is an important sense organ. It pervades all the sense organs. No sensation can occur without a sense of touch. All the five kinds of sensations could be received through tactile sensation only<sup>xlvii</sup>.
- 3) It is an important organ of excretion of Sweda Mala. Through the mechanism of perspiration it also regulates the temperature of the body. So it is an important organ for heat regulation.

## 6) SNAYU-

### Utpatti –

Vridhdha Vagbhata has mentioned that accomplishment of Snayu takes place at sixth month of gestational period. According to Madhukoshakara emergence of Snayu takes place at seventh month of gestational period<sup>xlviii</sup>. With the help of Vayu, Sneha of Meda gets transformed into Snayu by the action of Agni. The 'Khara Paka' of Agni is responsible for conversion of Meda to Snayu. Acharya Kashyapa opines differently regarding the emergence of Snayu.

According to him Snayu is derived from Asthi and Mamsa Dhatu<sup>xlix</sup>. Nourishment of Snayu is derived from essence part of Meda Dhatu<sup>l</sup>.

### Characteristic features of Snayu –

It is mentioned under Pitruja Bhavas. Sthula (Corpulent), Sthira (stable), Murtimad (having specific form), Guru (heavy), Khara (rough) and Kathina (hard) properties of Snayu are indicative of dominance of Prithvi Mahabhuta<sup>li</sup>. Snayus are solid, dense, tough, strong and rigid in nature. It contributes to the anatomical configuration of Marma. It is mentioned under Madhyama Roga Marga<sup>lii</sup>. It forms the Mulasthana (origin) of Mamsavaha Srotasa. Concealed Snayu reveals longevity of life<sup>liii</sup>.

### Functions of the Snayu:-

Snayu bound the various structures of the body. Mamsa, Asthi, Meda are fastened by the Snayu. It supports all these structures<sup>liv</sup>. Due to contiguous support of Snayu all the joints of the body are able to sustain the body weight<sup>lv</sup>. Just like a boat made up of firmly joined wooden planks, which bear the weight of many persons in water, Snayu execute crucial role to bear the body weight<sup>lvi</sup>.

Injury to the Asthi, Mamsa Pesi, Sira & Sandhi do not cause as much disability as an injury to the Snayu<sup>lvii</sup>. Great oracle Sushruta has described the Snayu Viddha Lakshanas as shortening, debility of body parts, inability to perform their actions, severe excruciating pain. Wound healing after a long time should be understood as caused due to cut or injury to the Snayu<sup>lviii</sup>.

## 7) SANDHI-

Articulation points of two or many structures are termed as Sandhi. Sandhi is mentioned as the Upadhatu of Meda Dhatu<sup>lix</sup>. Classics have given emphasis on the joints of bones.

### Relation with Dosha:

1. Vayu: - Various movements at Sandhi are carried out with the help of Vyana Vayu.
2. Kapha: - Kapha Dosha plays an important role in smooth functioning of Sandhi<sup>lx</sup>.
3. Sleshaka Kapha is present at Sandhi<sup>lxi</sup>.

Sleshma provides the lubrication to joints. Lubrication, which is given by Sneha of Meda, Kapha Dosha follows the same path. Deeply located joints, Sira, Snayu indicate the long span of life. They are considered in Madhyama Roga Marga. They are mentioned as the Mulasthana of Majjavaha Srotasa.

### Functions of Sandhi: -

All types of movements are performed due to presence of thin articulating entity. This structural architecture helps to do all the activities of body. They participate in anatomical derivation of Marma.

Any type of injury to Sandhi causes great debility. Great seer Sushruta has explained sandhi Viddha Lakshanas. When the joint, either movable or immovable are injured there will be great swelling, very severe pain, and loss of strength of the joints, splitting pain, edema and loss of function of the joints.

### IMPORTANCE OF UPADHATU:-

#### Role of Upadhatu in Marma Sharira-

Marmas are important anatomical locations where the Prana resides. Out of twelve elements of Prana, three Doshas, three Manasa Gunas and Bhutatma these seven Prana reside at Marma. Physical matrix having suitable Upadhatu and Dhatus serve as a favourable platform for the functioning of these elements. The treatise of Acharya Sushruta defined Marma as the meeting point of Mamsa, Asthi, Sira, Snayu and Sandhi. Out of these five entities three are none else than Upadhatu. Out of 107 Marmas the

anatomical configuration of 88 Marmas are designed by Upadhatu. This reveals that-

1. For most of the Sadyapranahara Marma the platform is furnished by Upadhatu Sira.
2. Most of the Vaikalyakara Marma are designed by Upadhatu Snayu, Sandhi and Sira. Any type of injury to these Marmas results in the deformity of the related body parts. These magnify the pivot role of Upadhatu in the construction of Marma and so for the survival of life.

### Relation of Doshas with Upadhatu-

Specific relationship of Dosha is observed with Upadhatu. Vata Dosha is principally resides at Kandara, Sira, Snayu and Sandhi to perform various function of the body<sup>lxii</sup>. Pitta Dosha mainly resides at Raja. Twak is the seat of Vata and Pitta Dosha. Kapha Dosha resides at Stanya and Vasa.

### Importance of Upadhatu in pathogenesis:-

The diseases of Raja and Stanya are restricted to female physiology. Except Twak and Vasa other Upadhatu (i.e. Sira, Snayu, Kandara and Sandhi) may be categorized under one group<sup>lxiii</sup>.

Acharya Charaka has specified a group of diseases which supervenes mainly due to vitiation of Upadhatu. Stambha, Sankocha, Khalli, Granthi, Sphurana, Supti are the diseases which manifest at Sira, Snayu, Sandhi and Kandara<sup>lxiv</sup>.

**Table – VI Upadhatu and related pathology**

Upadhatu	Disease Status
Raja, Stanya	Concern with female physiology and related pathology.
Kandara, Sira, Snayu, Sandhi	Distinctly related with Vatavyadhi and involved in chronic stage of other



	diseases.
Sira	Conveyance of Doshas to the place of "Kha Vaigunya", thus involved in pathogenesis of many diseases.
Vasa	Distinctly involved in 'Prameha'. One of the Dushya of Prameha.
Twak	Many underlying pathological conditions manifest on skin.

### Relation with Rogamarga:

Great oracle Charaka has elucidated Trividha Gati of Doshas as they move in Kosta, Shakha and Marmasthi Sandhi<sup>lxv</sup>. These are the pathways of diseases where disease manifest and progresses. Among these three Roga Margas, diseases of Vasa and Twak Upadhatu are included in Bahya Roga Marga and that of Sandhi, Sira, Snayu and Kandara are included in Madhyama Roga Marga. The knowledge about pathways of disease is important to ascertain the prognosis of that disease. The diseases of Madhyama Roga Margas indicate bad prognosis<sup>lxvi</sup>. Diseases restricted to Bahya Roga Marga are easily curable.

### DISCUSSION -

Historical review reveals that in Samhita Kala revered Acharya Charaka mentioned the components of Upadhatu collectively as a unit. This forms a good platform for commentators to develop the concept. Acharya Bhoja and Gayadasa who belong to 11th century, one among the two might have introduced the term 'Upadhatu' for first time. The commentators of 11th and 12th century like Chakrapani and Dalhana contributed significantly to elaborate the concept. Etymological meaning reveals

close resemblance between Dhatu and Upadhatu. There mentioned four Dhatus to which Upadhatu belongs in specific order. Astanga Sangraha adds Sandhi as a Prasadaja entity, which is accepted by Dalhana and included it under previous list of Upadhatu. Hence the number becomes eight. Sarngadhara has introduced a new Unit of Upadhatu. He added Sweda, Danta, Kesa and Oja to the list and deducted Sira, Kandara, Twak and Snayu.

Upadhatu are byproduct of Dhatu metabolism. They are produced from Dhatu but at secondary and subsidiary level. They have no fate of nourishing further Dhatu or Upadhatu. Upadhatu are nourished from Prasadaja portion of Dhatus. They receive their nourishment from that Suksma Prasadaja portion of Dhatu which provides nourishment to the successive Dhatu. This may be the reason that the structural configuration of Upadhatu show close resemblance with successive Dhatus. Dhatvagni, Vayu and Srotasa plays significant role in proper nourishment of Upadhatu. Srotasas are necessary to convey the nourishing material to the abodes of Upadhatu. Hence on the basis of related fundamentals quoted in Bhrihatrayee it is proved that Upadhatu are also having their own Srotasas, through which they receive their nutrients. Agni present at Upadhatu level is a type of Bhutagni. This Agni is responsible for the final configuration of the molecules, which are homologous with the Upadhatu. Emergence of all the Upadhatu except Raja and Stanya takes place during gestational period only.

Though Kandara is mentioned as a type of Snayu, besides Meda it is stated as Upadhatu of Rakta. This is because though anatomically it closely related with Snayu at physiological level, the nourishing pool of it is derived from Rakta and not from Meda. Thus while treating Kandara related disorders physician need to consider this relation.

Emergence of Sira takes place along with Snayu. Moderate heat for short duration results in formation of Sira from Meda. Sira provide substratum for various functions of

Tridosha. Vasa shows close resemblance with Meda Dhatu. Both the structures are nourished from Prasadaja portion of Mamsa Dhatu.

For the smooth functioning of muscles a lubricating material is placed in the form of Vasa, which alleviates Vata Dosa. Deficiency of this Upadhatu causes deterioration in the status of Mamsa Dhatu. Twak is the Upadhatu of Mamsa. Mamsa provides support to the skin and also nourishes it. Their functions similitudes with each other. If the skin is damaged the rejuvenation process starts from most inner layer of the skin which is in close contact with Mamsa Dhatu. In such conditions administration of Mamsavardhaka Dravyas (which nourishes Mamsa Dhatu) regain its normal status very rapidly. In head region the Mamsa Peshi are having their insertion directly on the skin. This may be the reason that Twak is mentioned as a Mulasthan of Mamsavaha Srotasa, though it is Upadhatu of Mamsa.

Snayu are mentioned as a Mulasthan of Mamsavaha Srotasa, though it is the Upadhatu of Meda, which is next to Mamsa Dhatu. Snayu bounds Mamsa Peshi to Asthi, thus they provide a firm base for attachment and bear it. This may be the reason that Snayu are mentioned as a Mulasthan of Mamsavaha Srotasa.

#### CONCLUSION –

Acharya Caraka has introduced the Concept of Upadhatu. Commentators have contributed significantly to illustrate the Concept. Upadhatus are closely related with the Dhatus. First four Dhatus exhibit a distinct role in derivation of Upadhatus. Upadhatu possesses their distinct Srotasa. Bhutagni are present at the level of Upadhatu. Upadhatus are of two types i.e. structural entities & functional entities. Raja and Stanya are functional entities restricted to Stri Sharira. They are derived only by means of nourishment of progeny, play a pivotal role in continuation of human species. Kandara, Sira, Snayu, Sandhi and Twak are principally involved to design the structural architecture of the body. Snayu is an important structural entity evolved to bear

the body weight. Upadhatus have great importance in pathogenesis of various disorders.

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