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THE CONCEPT OF UPADHATU PRADOSHAJA VIKARA

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ABSTRACT

Upadhatu refers to body elements that are identical to the dhatus, which are produced by dhatus. Sthanya, Raktha, kandara, sira, vasa, shad twacha, snayu, and sandhi¹ are those elements that have a structural function and will not nourish the body and elements which are not subjected to the process of transformation. The important function of upadhatu is to support the various structures of the body but they do not undergo any specific transformation process like dhatus. These can also get vitiated and can produce diseases so-called as upadhatu pradoshaja vikaras or dushyas. Any functional derangement can lead to temporary or permanent disability like sthambana (stiffness), samkocha (contractions), khalli (neuralgia of extremities) sphurana (throbbing sensation), supthi (numbness), and granthis (new growth). Hence by knowledge of this concept, one can diagnose early, know the prognosis, adopt preventive measures, and give precise treatment.

Keywords: *Upadhatu Pradoshaja Vikara*, secondary tissues, *sira* (nerve), *snayu* (tendon).

INTRODUCTION

Dhatus and upadhatus are among the components of the body². Rasa (plasma), asrk (blood), mamsa (muscle), medas (fat), asthi (bone), majja (bone marrow), and sukra (semen) are seven dhatus which are basic tissues each succeeding one gets formed from preceding one transformed by heat or energy of pitta 'pachita pitta thejasa'. Those elements which nourish and support the body are called dhatus. Each of the seven dhatus nourishes the next one and helps in the maintenance of the body while upadhatus only help in the maintenance of the body but do not nourish any other next dhatu. Upadhatus are the byproducts of dhatus and the important functions of *upadhatus* are to provide support to the various structures and organs of the body The seven upadhathu produced by the dhatu during metaboilism are sthanya (breast milk), raktha (menstrual blood), kandara (tendon), sira (blood vessel), vasa (muscle fat), shad twacha (skin), snayu (ligaments) and sandhi (bone joints)^{1.} Acharya Charaka specially mentions the disorders of sira, snavu, and kandara in Sutrasthana. Eminent oracle Sarngadhara has not accepted the opinion of the former Acaryas. He introduced a modified unit of *Upadhatu*. Sarngadhara has asserted Stanya (breast milk), Raja (mensrual fluid), Vasa (fatty material), Sweda (perspiration), Danta (teeth), Kesa (hairs), and Ojas as Upadhatu³. Ojas is also considered Upadhatu by Sarngadhara. When doshas become provoked in the snayu, sira, kandara, etc they afflict the person with stiffness, contraction, neuralgia, etc. these diseases are called upadhatu pradoshaja vikaras.

Upadhatu pradoshaja vikara is such a topic, its detailed description is not available in the Samhitas. And the difference of opinion of upadhatu and interpretation of the possible effects of these diseases is much more necessary. Reference of disease of ojas such as hataujasa jvara, ojonirodhaja jwara⁴, etc which plays a significant role in the present pandemic era needs to be discussed.

MATERIALS AND METHODS

Dhatus are those rudiments that nourish and support the body. The word *dhatu* arises from the root verb 'du' dhna meaning dharana and poshana. Each of the

seven *dhatus* nourishes the next one and helps in *dharana* (maintenance) of the body while *upadhatus* only help in the maintenance of the body but they do not nourish any other or next dhatu. The seven dhatus are also have been described as *dushya* as they are vitiated by the *dosa*.

Upadhatus are by-products of the seven principal dhatus. The important function of upadhatus is to support the various structures of the body but they do not undergo any specific transformation processes like dhatus. Food also nourishes the upadhatus like dhatus of the body like rasa nourishes stanya as well as arthava or rajah in the women only. Rakta nourishes kandara and sira. Mamsa nourishes vasa as well as six layers of skin and medas nourishes the snayu and sandhi. The description shows that asti, majja, and sukra produce no upadhatu according to Acharya Charaka. Upadhatus can also vitiate and can produce a disease so also known as dushyas. Stanya and artava are available in the females only and the rest of the upadhatus are common in both sexes. Acharya Sushruta does not have described *Upadhatus*, but his commentator Dalhana is seen to have not only taken note of them but also to have included *sandhis*(joints) in the list⁵.

Upadhatus according to different Acharyas is shown in table 1

Upadhatu pradoshaja vikara

Dhatvagni, Vayu, and Srotas play a significant role in the proper nourishment of *Upadhatus*. Vayu is responsible for the conveyance of a specific amount of nutrient to a *Upadhatu*. *Srotas* are the channels of transportation and transformation. "Parinama Apadyamana Dhatus" are navigated through Srotas. Agni is essential for any type of transformation. So, it is concluded that Dhatvagni of each Dhatu resides at Srotas, which is responsible for *Parinamana* of *Dhatu* from one state to another. Dhatvagni is closely related to Upadhatu. Deteriorated the status of *Dhatvagni* affects the normal functions of *Upadhatu*. To convey the nourishing material to the abodes of *Upadhatus*, *Srotas* is necessary. Hence it is stated that *Upadhatu* is also having their own Srotas, through which they receive their nutrients. Agni presents at *Upadhatu* level is a type of *Bhutagni*. *Upadhatus* is the finest product of *Dhatu* metabolism. Upadhatus are nourished from the Sukshma prasadaja part of the *Dhatu*, which also nourishes the *subsequent* Dhatu. Upadhatus are of two types i.e., structural entities & functional entities. Kandara, Sira, Snayu, Sandhi, and Twak are principally involved to design the structural architecture of the body. Kandara & Snayu anatomical and functional resemblance. Upadhatu of Rakta is Kandra while Upadhatu of Meda is Sanayu. Upadhatu of Mamsa is Vasa, it is a lubricating agency placed for smooth functioning of muscles. Twak mantles the whole body, it also provides a platform for various functions of Vayu and other Dosa. Sandhis are Upadhatu of Meda. They are articulating joints of the body. All the movements of the body are practiced due to the presence of this entity. Upadhatus have great importance in the pathogenesis of the disease. Kandara, Sira, Snayu, and Sandhi are included in Madhyama Roga Marga, which are complicated to treat. Upadhatu disease of Rajah, Stanya is concerned with female physiology. Kandara, Sira, Snayu, Sandhi are distinctly related to vatavyadhi & involved in chronic stages of other diseases. Sira conveyance of doshas to the place of "khavaigunya" thus involved in the pathogenesis of many diseases. Vasa is distinctly involved in prameha, one of the dusya of prameha. In Twak many underlying pathological conditions manifest on the skin. *Upadhatus* have great importance in the pathogenesis of the disease. Kandara, Sira, Snayu, and Sandhi are included in Madhyama roga marga, which are complicated to treat.

Dhatu-Upadhatu relationship along with panchamahabootha is explained in table 2 Relation of *Updhatus* with their disease.

Stanya nothing but breast milk is the *upadhatu* of *rasa dhatu*. The essence of *rasa dhatu* produced by digested food, which is sweet, coming into the breasts from the entire body is known as *stanya*. *Stana/ stanya* problems occur in those ladies who have delivered children (*prajata*) and those who are pregnant. *Sthanakilaka* resembles mastitis or breast abscess is also one of the *stana roga*⁶. Aggravated *dosas* getting localized in the breasts whether having milk or not vitiate blood and

muscle and give rise to disease. Vitiation of breast milk with dosha and deficiency-related diseases like *Phakka roga* disease can also be considered as breast milk vitiated with *kapha* dosa⁷.

Rajas/Artava (female reproductive tissue-menstrual blood-ovum) possesses the same characteristics as blood and helps in the formation of the embryo. Diseases related to the female reproductive system such as hormonal and menstrual disorders, dysmenorrhea, amenorrhea, dysfunctional uterine bleeding (DUB), premenstrual syndrome, pelvic inflammatory disease (PID), vaginitis, 20 Yoni vyapat⁸, Rakta gulma⁹ (tumors and related conditions), dusta artava, artavaksaya, etc can be considered under upadatu pradoshaja vikara of artava / raja.

Snayu is the fiber structure through which dosha circulates in the body is snayu. According to shabdha kalpadruma, Snayu is vatavahini nadi. It is hollow in ashaya, branching in extremities, circular in the trunk, and thick in the head. Bony joints are bound by the snayu, and they make the body stable and erect. Snayu pradoshaja vikara causes serious illness and injury to snayu causes fatal. According to Acharya Charaka, Snayu gata vata¹⁰ causes bahya abyanthara ayama, khalli, kubjathwa, sarvanga, and ekanga roga. Opisthotonos, emprosthotonos, athetosis, stooping of the body, and paralysis can be considered under snayu pradoshaja vikara as ligaments and nerves are involved thus being fatal.

Kandara. Kandara maha snayu¹¹. Elongated snayu is called kandara, which are 16 in number. Hands, legs, neck, and back; each possesses 4 kandara. General structures of kandara are proximal bulbous end and distal thin tip. Whereas kandara of the neck can be a ventral or anterior division of the spinal nerves. Kandara of the back can be a posterior or dorsal division of spinal nerves. Kandara of the hands are proximal end is at the shoulder, the distal end is at nails or bones. Kandara of legs is proximal end at the thighs, distal at nails. When kandara is located at the back of the arm when affected with morbid vata, the patient suffers from viswachi. Whereas Khanja pangu occurs when kandara is located in the low back region when affected with morbid vata.

Siras are the structures having branching patterns that are categorized as sira (blood vessels). Branching of sira spreads from nabhi. These are spread in the whole body as a fine network in a leaf of a tree¹². Total 700 siras. It is the Upadhathu of Rakta dhatu. Nadi and dhamani are synonyms. Sira dhatu nourishes, lubricates, and moistens the entire body constantly and it mediates bodily activities like contractions, speech, sleep, and awakening. The neurological functioning of sira is flexion, extension, speech, and cognitive. Pathology occurs in sira due to morbid vata causing sira dusti leading to the manifestation of a variety of vata vyadhi. Example: Pakshaghata where in which morbid vata beholds either side of the body dries up the sira (nerve) and snayu (tendon) of that part and produces chesta nivrutti (loss of movement) along with ruja(pain) and vaakstamba (unable to speak). Stroke is the clinical term for acute loss of circulation to an area of the brain resulting in ischemia and a corresponding loss of neurologic function such as weakness, sensory deficit, or difficulties with language.

Sandhi. The joints of the bones with the help of synovial fluid and membrane support the movement just like the wheels move easily when the axle hole is lubricated with oil. When vitiated dosha effects it causes loss of function or false movement, pain, soft-tissue edema, and deformity. Some examples are Krosturasheershaka, sandhigata vata, amavata

Sarngadhara has asserted Stanya, Raja, Vasa, Sweda, Danta, Kesa, and Oja as Upadhatu

Vasa and shat twacha are upadhatu of mamsa. Vasa is distinctly involved in prameha, one of the dusya of prameha. Twacha is the source of sparsa jnana touch sensation. Skin is the site for brajaka pitta. The main functions of the skin are maintenance of homeostasis, protection, maintaining body temperature absorption of vitamins, melanin and keratin production, etc. Skin covers the organs, tissues bones, and muscles of the body. An important function of the skin is to protect the body from infections thus with decreased immune system infection from a variety of germs can cause pradoshaja vikara like kusta in general. Skin infections-boils or furuncles caused due to local styphylococcus infections of hair follicles, Prameha pidaka (7

carbuncles), impetigo, fungal infections or tinea, warts, burns, urticaria, psoriasis, bedsore or decubitis ulcers

Sweda is the upadhathu of medhas. It bestows the moistness and softness of the skin. As it's the upadhathu of medas diseases due to vitiation medas include prameha, obesity and over sweating¹³. Sweda kshaya produces obstruction of hair follicles dryness of skin, abnormalities of tactile sensation and absence of sweat etc¹⁴. Sweda vriddhi causes dourgadya and kandu¹⁵. In Sweat glands, odorless Apocrine glands' secretions become odorous when bacterial decomposition occurs. The sebaceous gland is associated with hair follicles causing sebum accumulation and forming white pimples. With oxidation, this accumulated sebum darkness forms a blackhead.

Danta the upadhatu of asthi dhatu. Danthamulagata roga (periodontal disease) which results from an immune response of an individual to chronic infection of gram-negative bacteria can be considered one of the upadhatu pradoshaja vikara. The risk factors for periodontal disease include the presence of specific subgingival microorganism, smoking, and diabetes mellitus. Sheetada (scurvy gingivitis), dantapuputta (peripheral or dento alveolar abscess), shaushira, vardhana, or adhidantha, adhimamsa, upakusha (periodontitis), and krimidanta, etc are considered under danthamulagata roga in classics¹⁶.

Kesha is the upadhatu of Asthi dhatu. Hair follicles protect the body from the extreme temperature of the environment by acting as an insulator. Also does tactile receptor function. Scalp hair protects the head from mechanical injury as well as from heat, rays, etc. Indralupta¹⁷ (baldness)/ khalithya where in which vitiated vata make hairs fall off then kapha together with raktha blocks the hair follicles making the growth of new hair follicles impossible and palithya¹⁸ (grey hairs) are some of the pradoshaja vikara vikarara.

Ojus is nothing but the essence of *sukra* formed as the result of the union of the sperm and ovum. Entrance of *ojus* into the heart of the embryo manifest cardiac activities¹⁹. The fraction or form of Ojas which circulates all over the body through the cardiovascular system moves along the *rasa dhatu* thus called *rasatmaka*

ojas. All the WBCs circulating in the intravascular compartment can be included in this. Another form of Ojas is present in all tissues and this is called Dhatutejo rupi. This indicates the immune mechanisms present at the tissue level like those due to tissue macrophages, mast cells, and other WBCs of tissue. A third form of *Ojus* is *Sukramala rupi*. This enters the fetus to protect the fetus during intrauterine life. Immunoglobulins that cross the placental barrier to enter fetal circulation can be included under this category. Another form of *Ojus* is described as *Jivasonita rupi*. This is specific for blood cells. All the hypersensitivity reactions involving blood cells can be assumed to be resulting from the malfunctioning of this form of ojus. Thus, most of the features described under disorders of ojus are seen in persons suffering from immunodeficiency disorders²⁰. Oja is also considered a upadhatu by Sarngadhara. Disease of ojas is hataujasa įvara, ojonirodhaja jwara, madhumeha etc. Ojonirodhaja *jwara*⁴. The patient of fever in whom *ojas* is decreased by the aggravation of pitta and vata who has the rigidity of the body, coldness desires to sleep always, loss of consciousness, gets into sleep and awakes often, has stupor, delirium, horripilation, weakness of the body parts, a mild increase of temperature and discomforts such a patient should be understood by the intelligent physician as suffering from ojo nirodhaja jvara. This fever increases greatly on the 7th, 10th, or 12th day either subsides or kills the patient. Vishesha sannipata jwara-special toxic fevers such as Typhoid fever can be considered here.

In *Abhinyasa jwara*²¹ body is neither very hot nor very cold (a moderate increase of body temperature), loss of consciousness, debility, unsteady eyes, loss of voice, coarse tongue, dryness of the throat, absence of sweat, feces, and urine, eyes reddish and regular, discomfort in the chest, aversion to food, loss of complexion, dyspnoea, falling from the cot and lies on the floor, suffers from the irrelevant talk with these symptoms the fever is called *Abhinyasa jvara* and as *Hataujasa jvara* by some others. *Sannipata jvara*. It is difficult to cure, some others say it is incurable. Among *sannipata jvaras*, *abhinyasa jvara* should be understood when the patient has more sleep; *hataujasa*

when there is loss/decrease of *ojas* (the essence of tissues), and *sannayasa* when there is a loss of conscious activity of the body. According to *Astanga sangraha*, also known as *hrithoujasa jwara*²¹, it can be considered Rheumatic fever.

DISCUSSION

Nevertheless, by the name they are sub-tissues or secondary tissues, the *upadhatus* render very significant functions in the body. Deprived of *upadhatus* numerous important functions could not be imagined. Stanya is helpful in lactation, aartava in regular cleansing and maintenance of health in a woman and also in reproduction, siras benefit in circulation, kandaras and snayus help in back up the body and holding the body tissues together, vasa aids in lubrication and twak in enveloping the body, protection and beautification and sandhis assistance in our movements and locomotion. Imbalances in upadhatus in the form of pathological increase (vriddhi) and or decrease (kshaya) will lead to countless diseases and deformities. Therefore, it is important to know in detail about upadhatus, their site, kinds, number, and functions. *Upadhatus* are the byproducts of the *Dhatu* metabolism, but they cannot be considered the Malas because Upadhatus are nourished by the *prasadaja* part of the Dhatu.

CONCLUSION

Acharayas at different periods of time enlightened the thought of upadhatu in their own ways. Though upadhatus do not nourish any successive they are nourished from the Sukshma Prasadaja part of the Dhatu, which also nourishes the subsequent dhatu. Dhatvaagni and Strotas play an important role in the nourishment of Dhatu and updhatus. Upadhatus have great importance in the pathogenesis of the disease. Kandara, Sira, Snayu, and Sandhi are included in Madhyama Roga Marga, which are intricate for treatment²². Upadhatu provides a link between these fundamental entities. This link is also mandatory to ensure all the physiological functions. Their function instigates since the evolvement of the mortal itself. The decisive motto of science is to achieve the health of humans. Hence it is necessary to illuminate the knowledge of *Updhatu Pradoshaja Vikara* for laid-back diagnosis and to descend treatment protocol.

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Table 1

Upadhatu	Charaka Samhitha, Chakrapani	Astanga Sangraha, Dalhana	Sanrangadhara samhitha
1	Stanya	Stanya	Stanya
2	Rakta	Raja	Rajas
3	Kandara	Kandara	Vasa
4	Sira	Sira	Sweda
5	Vasa	Vasa	Dantha
6	Shat twacha	Twak	Kesha
7	snayu	Snayu	Oja
8	Sandhi	Sandhi	

Table 2

Dhatu	Panchamahabootha	Upadhatu
1. Rasa dhatu	Apya	Stanya, Rajas
2. Rakta dhatu	Tejas +jala	Kandara
3. Mamsa dhatu	Parthiva	Vasa, Shat twacha
4. Meda dhatu	Jala+parthiva	Snayu, sandhi, sveda
5. Asthi dhatu	Parthiva+ vayu	Dantha
6. Majja dhatu	Jala	Kesha
7. Sukra dhatu	Jala	Ojas

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