CONCEPT OF NUTRITIONAL DYNAMICS OF TISSUE (DHATUPOSHANA)- AN AYURVEDIC APPROACH

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ABSTRACT

In Every dynamic system whether it is a machine or living cell, it loses mass when it is left to itself. Against this persistent destructive –tug, the living cell must pit itself-repair and replace. The structural metabolism based on nutrition, and energy metabolism makes such gains possible. Fuel sources are required from which structural supplies may be procured. The concepts of Saptadhatus of ayurveda refer to the physiology of basic nutritional and structural factors of the body. They are being constantly formed, destroyed and reformed with appropriate material derived from Poshakadravya (nutrient substances) from the time of conception to death. All ancient texts have postulated the view that Saptadhatus are produced in a kind of progressive transformation, beginning with the Rasadhatu and ending with Sukradhatu, the previous dhatu being transformed in to the next higher. The implications of this theory have been sought to be explained in terms of three different hypotheses. These theories regarding the nourishment of the Dhatus are termed as “DhatuPoshanaN-yaya”. The KsheeradadhiNyaya emphasizes on the Dhavagnipakajanyaprasadamsha (Law of Transformation) while the KedariKulyaNyaya stresses on the Rasasamvahana (microcirculation and tissue perfusion) and the KhaleKapota on the Srotasas /Channels (selective uptake of nutrient by respective cells and tissues).

Keywords: Nutrition, Poshakadravya, DhatuPoshanaNyaya

INTRODUCTION

The body, according to Ayurveda is the result or an outcome of nutrition. Diseases, on the other hand, are the result of mal and or impaired nutrition. The manner in which the nutrition ingested is digested: the way in which its various components are metabolized in to appropriate dhatu or tissue elements, and how some of its constituents are broken down for being utilized for the production of energy required for vital activities. The concepts of Saptadhatu of ayurveda refer to the physiology of basic nutritional and structural factors of the body. They are being constantly formed, destroyed and reformed with appropriate material derived from Poshakadravyas (nutrient substances) from the time of conception to death. All ancient Samhitagranthas have postulated the view that saptadhatus are produced in a kind of progressive evolutive metamorphosis, beginning with the Rasadhatu and ending with Sukradhatu the previous dhatu being transformed in to the next higher. Ancient scientists described the evaluative metamorphosis of dhatus as occurring in the course of dhatwagni, yielding dhatus and kittas, in its prasada and kit-
tapakas respectively. These dhatus constantly undergoing metamorphosis and transported through dhatuvahasrotansi (Channel that conduct dhatus). Dhatus are classified in two categories 1) Sthayi or Posya 2) Asthaylor Poshaka. The Sthayi or Posyadhatu support the body, by providing it with basic tissue, the Poshaka (asthayi) dhatus are seen to support the former by nourishing, sustaining and maintaining them. The term dhatu pertain to nutrients also in transit and not only to tissue that already exist such as bones, muscles, blood etc. The implications of this theory have been sought to be explained in terms of three different hypotheses. These theories regarding the nourishment of the Dhatus are termed as “DhatuPoshanaNyaya”.

**Pattern of structural metabolism**

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**NOURISHMENT OF THE DHATUS AS PER THE DHATUPOSHANANYAYAS**

The examination of the subject with the proper evidences and logic is the Nyaya. The Siddhanta is the one which is accepted by all after multiple experimentation and observation and is always the truth but the Nyaya is ones view and is the way a person sees a process happening which varies from person to person. In the case of the “DhatuPoshana” also a number of theories have been proposed. Thus, all these theories proposed by the Acharyas are to be seen as a view based on the observation and logic. Thus, these theories regarding the nourishment of the Dhatu are termed as “DhatuPoshanaNyaya”.

1) **KSHEERADADHINYAYA (MAXIM OF THE MILK & CURD)**

Also known as the Law of Transformation, or the Sarvatmana Parinama Paksha, the Ksheeradadhnyayaya has been the first of the theories placed forward towards the understanding of the Dhatu Poshana. According to this Nyaya, the one Dhatu becomes the nutrient for the other. This implies the transformation of the Rasa into Rakta, Rakta into Mamsa, and Mamsa into Meda and so on. Thus, the previous Dhatu acts as a substratum for the successive one. The time taken for transformation of Rasa into the Shukra as per this Nyaya is explained in various ways by the seers of yore. As per the strength of the Dhatavagni and the Bhootagni, the RasaDhatu undergoes transformation into the successive Dhatu.

Some Acharyas say that the Rasa transforms into the Shukra in six days. Parashara says that the AharaRasa transforms into the RasaDhatu in 24 hours, RaktaDhatu is formed on the third day, Mamsa forms on the fourth day, Meda on the fifth, Asthi on the sixth, Majja on the seventh and the Shukra is formed in the eight days. Sushruta is of the view that the Rasa stays in each Dhatu for a period of 3015 Kalaas, approx. 5 days. Thus, in about a month the Shukra and the Artava are formed in the Male and Female respectively. Thus, from the above difference of opinions it is hard to pinpoint the time required for the transformation of the Dhatu. This means that the DhatuPoshana process continues continuously without any pause.
In this, an example of the person drawing water from a well using a wheel; it is found that the strength of the person turning the wheel is responsible for speed of drawing the water out of the well. The more the strength of the person the more is the speed of drawing the water. Similarly, the strength of the factors like Agni decides the time for the formation of the Dhatu.

Raising the doubts in the authenticity of the KsheeradadhiNyaya, Acharya Chakrapani contends that if this Nyaya is accepted then, if a person performs fast for 3-4 days, the rasadhatu of this individual should be depleted. Similarly a fast of a month shall make the body devoid of all the six Dhatus and only the Shukra will remain. Clarifying these doubts Vagbhata and Dalhana say that after the digestion of food the food gets divided into two parts viz. the Sara (potent part) and the Kitta (Excretory part). The Sara is acted upon by the Dhatavagni that again divides this part into two parts, one Sthoola and other Sookshma. The Sthoola part nourishes the Dhatu while the Sookshma part nourishes the Upadhatu and the successive Dhatu. The Sookshma part of the preceding Dhatu is acted upon by the Agni of the successive Dhatu which produces three parts viz. Sthoola, which nourishes the self (Dhatu); Sookshma, which nourishes the Upadhatu and consecutive Dhatu; Mala which nourishes the excretory portion.

2) KEDARIKULYANYAYA (MAXIM OF THE FIELD AND THE CANAL) -

This is also known as the Law of Transmission or the Kramaparinamapaksha.

The Kedari means the field while the Kulya means the canal. This Nyaya likens the nourishment of the Dhatus with the irrigation of the different fields with the canal. The water irrigates the nearby field first and then it irrigates the distant ones. The Rasadhatus nourishes the Rakta first. When the Rasadhatus contacts with the site of the Raktadhatu, the former takes the form of Rakta i.e. the Rasa acquires the odour, colour of the Rakta and nourishes it by the homologous fraction. Similarly, other Dhatus are nourished. The specialty of this Nyaya is that the Rasa travels through a single path and nourishes all the Dhatus. Harita has also accepted this theory. According to him the Rasa Dhatu undergoes change of the colour to white; grey and green etc. throughout the day before it gets converted to Rakta. This Nyaya is most widely accepted among the Dhatu Poshana theories. This Nyaya explains all the aspects of the Dhatu Poshana processes. The Rasa in the state of excess will not accept the nutrients just as the field which is completely saturated with water refuses to accept more, thus making more water available for the subsequent fields. Similarly, the increase in one Dhatu may lead to the increase of the nearby Dhatu as the channels of this Dhatu are very near. The Dhatu in excess will refuse to accept the Panchabhauditic raw material in the form of Rasa and makes way for the nourishment of the nearby Dhatus. From various references it becomes clear that there is physiological relation between the various Dhatus and their respective Srotasas / Channels and they are influenced by one another as the various canals for nourishment of the field are interlinked. Similarly, decrease in one Dhatu will lead to the decrease in the other as the diminished one will consume more nutrients just as the field that is dry consumes more water leading to the scarcity of water in the other fields. In the case of Rajayaksma, the interrelation between the various Dhatus is clearly visible in the concept of Pratiloma Kshaya.

The Pratilomakshaya means the kshaya of the later Dhatu shall lead to the kshaya of the previous one. Thus, it is to be accepted that the increase in one will also lead to the increase in the other proving the above principle. Another concept to prove this theory is by applying the Upasneha Nyaya. This Upasneha Nyaya has been explained.
in the context of foetal development. Just as the trees on the banks of a river get nourished with the water, the increased Dhatu also nourishes its nearby Dhatus. The word Upasneha indicates the mode of the travel of the nutrients like the Osmosis.

3) KHALEKAPOTA NYAYA / MAXIM OF THE BARN & THE BIRD - This is also known as the Law of Selectivity. According to this Nyaya, the nourishment of the Dhatu s takes place by selection. The nourishing fluid, AnnaRasa travels to the different Dhatus through different channels. In the beginning, the nearby Dhatu draws its nutrient fraction from the nourishing fluid and the distant one gets nourished later. This theory is based on the analogy of the pigeons carrying the grains from a field and moving in different directions to reach their destination, nest. The nest which is near will get the grain first while the nest farther will receive the grain later. This theory believes that each Dhatu has its specific nutrient, Poshakamsha (Nourishing part). This theory is accepted in the case of the origin of the disease also as the Doshas travel in the different Srotasas and the place where there is vitiation, Kha-Vaigunya, produce the diseases.

EK KALA DHATU POSHANAN-YAYA (MAXIM OF THE SIMULTANEOUS NOURISHMENT) This theory has been propounded by the commentator, Arundutta, as he doesn’t consider any of the theories fully applicable in explaining the Dhatu Poshana. Arundutta clarifies that the AharaRasa nourishes all the Dhatus of the body simultaneously by the particular fraction of that Dhatu by entering the respective Srotasa of that Dhatu. AcharyaCharaka has also narrated this in reference to the VyanaVayu which is said to carry the RasaDhatu throughout the body simultaneously.

DISCUSSION The process of birth and death is going on all the time- the dead cell being replaced by the new ones of the species. It seems to us that our body is stable and intact; in reality it is dying and being reborn all the time. The materials with which new cells are manufactured are derived only from one source, and that source is food. By the same token, the material for the formation of the functional factors, such as vata pitta and kapha, as well as the sevenfold structural elements viz. the saptadhatus, are also derived from the food ingested. These dhatus are formed, destroyed and reformed, all the time, in a living man, maintaining a state of dynamic metabolic equilibrium. Dhatus are of two kind’s viz. sthaya or poshya and asthaya or poshaka. The posyathayidhatus support the body by providing it with basic tissue, the poshaka or asathayidhatus are seen to support the former by nourishing, sustaining and maintaining them.

KedariKulyaNyaya or microcirculation and tissue perfusion: This nyaya states that the living body is provided with innumerable micro vascular channels which carry nourishment to the respective sites in Dhatus (tissues). The cells and tissues are literally perfused with nutrient plasma but mere tissue perfusion is not enough to complete the process of nourishment. This needs the complementary play of the subsequent two nyayas. Khale Kapot Nyaya refers to the selective uptake of nutrients by respective cells and tissues in the same way as the birds of different species pickup selective grains and cereals from common harvesting ground because the KedariKulyaNyaya provides a total pool of nutrients at the site of all tissues but the different tissues require different specific nutrients and hence there is a need of active selective uptake. As an example the bone tissue will only take the amino acids and minerals like Calcium Phosphorus, while the blood tissue will uptake specifically the nutrients like Iron etc. which is necessary for formation of blood. Vagbhata states that “As the flame of the forest fire tends to increase or decrease...
according to the quantity of fuel, so also is the case with dhatuparinama. Substances are either similar or distinct, which cause an increase or decrease as the case may be, of the tissues due to the properties potentially inherited by them, as in the case of a seed; homologous properties of substances cause sufficient and rapid increase of identical or homologous properties in the tissues”.

KshiraDadhiNyaya refers to the final transformation and assimilation of the up-taken nutrients into the tissue system and life process. This essentially is comparable with the conversion of milk into yogurt, hence the term Kshira “milk” Dadhi “yogurt” Nyaya. It is where the preceding tissues get transformed into the succeeding tissue. The first tissue, rasadhatu, is “cooked” by the respective agnis and becomes rakt, similarly the rakta (blood tissue) changed as mamsadhautu (muscle tissue) and mamsadhatu changes into medadhatu (fat tissue).

**CONCLUSION**

The above description makes one point clear that Ayurveda has accepted the importance of the Rasa in nourishment of all the Dhatus. All the Nyaya’s are correct in their approach and there is not much of a difference among them. The entire three Nyayas act as a unit and it is not possible to explain Dhatu - Poshana with the exclusion of any of them. Thus, all the three act in full harmony to show the complete process the Dhatu-Poshana. The Ahararasa first nourishes the Rasadhatus by the Ksheeradadhi Nya ya. The Rasadhatus accepts the nourishment from the Rasa and the remaining portion by the application of the Kedari KulyaNya ya nourishes the Rakta by behaving like the Rakta. The remaining portion moves ahead in the Mamsavaha Srotasas to nourish the Mamsadhatu. Thus, all the three act together to nourish the Dhatus. In this way the Dhatus nourish each other and so the increase in one leads to the increase of the other and vice versa proving the principle “Poorvahpoorvoati vriddh atvat- vardhayedhiparam. The Ksheeradadhi Nya aya emphasizes on the Dhatavagnipakajan ya prasadamsa while the KedariKulyaNyaya stresses on the Rasa samvahana and the KhaleKapota on the Srotasas/Channels.

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