Dhatu Poshan nyaya

Dhatus are nourished by specific Dhatuvaha Srotas and Dhatvagni. When Aahara Rasa reaches to the Dhatu through their specific Srotas, Dhatvagni transforms and assimilates the required nutrients for the nourishment of Dhatu. The role of Dhatuvaha Srotas and Dhatvagni in tissue nutrition has been explained by various Dhatu Poshana Nyaya i.e.,

Ksheer Dadhi Nyaya,

Kedari Kulya Nyaya,

Khale Kapota Nyaya,

Ek Kala Dhatu Poshana Nyaya.

Theory of total transformation (Ksheer Dadhi Nyaya)

This theory says that the ahararasa (chyme) is completely transformed into Rasa dhatu (body Fluids). Rasa dhtu is completely converted into Rakta dhatu and so on transformations of dhatu into next dhatu goes on till Shukradhatu (reproductive tissue). That means the initial molecule lose its form to transform into another form. Ksheer means milk and Dadhi is curd; as all milk is transformed into curd then butter after that into ghee and liquid form of ghee. Likewise, Ahara rasa is converted into Rasa-Rakta- Manas- Meda- Asthi- Majja -Shukra and their subtle forms of tissue and waste materials (Upadhatu and Mala). Dhatu transcript, translation and transformation takes place within specific period according to this theory. It is six days or thirty days to form last tissue of Shukra dhatu. The time of transformation into similar molecule is dependent upon the power of Agni (transforming enzymes and factors).

Chakrapani has rejected the above theory. He argues that if total transformation of Dhatu occurs, then a person who is starving for one month will be having only one Dhatu i.e., Shukra, which seems unlikely. He further elucidated that the term Prasadaja denotes the nourishment and not the production of succeeding Dhatu. He has explained the word 'Prasadaja' means 'Poshan' (nourishment) not the production of succeeding Dhatu from previous Dhatu. The Sara bhaga (essence) of ahararasa or any dahtu is liable to transform into another.

Charak and shushrut has different opinion for timing of dhatu formation. As mentioned in below table:

dhatu	charak	shushrut
Rasa	1st day	1st day
Rakta	2nd day	5th day
Mans	3rd day	10th day

Med	4th day	15th day
Asthi	5th day	20th day
Majja	6th day	25th day
Shukra	7th day	30th day

Thus, the theory of total transformation (Ksheer Dadhi Nyaya) is still relevant and elucidates possibly the following mechanism:

1. The transformation and differentiation of tissues taking place during embryogenesis.

2. Digestion and metabolism taking place at cellular level like gluconeogenesis, glycolysis, beta oxidation pathway etc.

3. Digestion in GIT: During the intestinal digestion too, the complex molecules are converted completely in to simple molecule with the help of specific enzymes.

Theory of circulation and transportation (Kedari Kulya Nyaya)

In this Nyaya analogy of water channels *(*Kulya) irrigating to the plots of paddy or wheat (Kedari) has been given to explain the mode of nourishment and pattern of distribution of nutrients to the Dhatus. This theory explains the process of nourishment of Dhatu in the similar fashion of irrigation of different field by water from the main canal which branches and re-branches into smaller channels. Thus, the nearby fields are irrigated first and thereafter distant fields are irrigated. In this way Rakta Dhatu gets nourished first by its homologous nutrient fraction present in Rasa Dhatu and thereafter other Dhatu in succeeding manner get nourished. This theory suggests the following things related to tissue nutrition: Individual blood supply to tissue or organs, Pressure gradient for blood flow or transportation of different nutrient substances, Time lag in nourishment of different tissue and Target drug delivery.

Each Dhatu gets nourished through their specific Srotas. The microcirculation of each organ is organized in such a way that it fulfils that organ's need. Each nutrient artery on entering the corresponding organ branches and re-branches six to eight times to become arterioles which further re-branched two to five times to become capillaries. Similar fashion of branching and re-branching of water channels irrigating to the field is observed in circulatory system too. The specific action of drug in particular tissue can be understood by this analogy of irrigation through specific Kulyas (channels). This theory suggests the specificity of channels for each tissue. Drug administered through different routes reaches to targeted tissue via its specific Srotas (channels) only. For example, Shatavari (Asparagus racemosus) as Shukrala (enhances sperm and ova formation), Shukti (pearl oyster) and Sikta Varga as Ashthiposhaka (enhances bone nourishment), Gokshura (Tribulus terrestris) and Ashwagandha (Withania somnifera) as Mamsabalya (enhances muscle growth, physical and mental strength) etc**.**

The law of selectivity (Khale Kapota Nyaya)

The Aahara Rasa nourishes to each Dhatu (tissue elements) by their specific channels. In this context, analogy of pigeons selecting the choicest grain has been given. Pigeons coming from different places to field, choose the grain as per their need and choice i.e., type of grain and quantity of grain are selected by them from the field. This analogy explains the following things related to nutrient supply and uptake: Selectivity, Receptor mechanism, Active mode of transport, Autoregulation and Time lag in distribution of nutrients in distant and nearby tissue.

The Khale Kapota Nyaya refers to selectivity of cells for uptake of nutrients and other chemical compounds. Plasma membrane is selectively permeable and does not allow all the nutrients to pass through it. Plasma or blood constitutes i.e., all the organic and inorganic substances required for growth and development are supplied to whole body and the specific nutrients are taken up by the tissues as per their requirement through specific channels. For example, nutrients like Ca, Fe, O2, amino acids circulate by binding with specific plasma protein, taken up by bones, muscles as per their requirement.

The pigeon whose shelter is nearer to the field will reach to the field earlier while whose shelters are far will reach later. Although Vyana Vata circulates Rasa Dhatu at a time to all over the body but still there is difference in fraction of time (in millisecond) for blood flow to nearer and distant tissues.

Simultaneous supply of nutrient to all the tissues (Ek Kaal Dhatu Poshana Nyaya)

This theory is propounded by Arunadatta, the commentator of Ashtanga Hriday. According to this theory after proper digestion of Ahara druvyas with the help of Jatharagni this Ahararasa enters into the all Dhatu vaha srotas at a time uniformly it can be presumed that all the Dhatus are nourished simultaneously without any time gap. In this connection Acharya Charaka has mentioned that after proper digestion this Ahararasa get mixed with the plasma of the body and due to the contraction and relaxation of heart by the Vyana Vayu takes this rasa to distribute all over the tissues of the body. According to Acharya Sushruta with the help of Vyana Vayu, Ahararasa nourishes all Dhatus at a time without interruption throughout life. It deals with circulation of nutrients (end product of digestion after absorption) through blood by the heart. It reaches all the tissue with each systolic function of heart and nourishes all the tissues at the same time.

The concepts of Saptadhatus of Ayurveda refer to the physiology of basic nutritional and structural factors of the body. Dhatus are formed, destroyed and reformed, all the time in a living man maintaining a state of dynamic metabolic equilibrium. The formation and nourishment of Dhatus is a continuing process which is occurred from the embryonic stage of the foetus to death. Above mention theories regarding the nourishment of the Dhatus are termed as “Dhatu Poshana Nyaya”