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## Analytical Review on Basic Tenets of *Dhatu Poshan Nyaaya* as per Contemporary Science

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### ABSTRACT:

An attempt has been made to explain the concept of *Dhatu poshan nyaaya* as per contemporary science w.s.r. to tissue nourishment. Various Ayurvedic classics and research article related to *Dhatuposhan* were collected and analyzed. Contemporary and recent research article regarding nutrition, metabolism, nourishment and *Dhatu poshan* were searched online from google scholar, PubMed, Medline Plus etc. *Ayurvedic* classics were searched for better understanding of *Dhatu* and *Dhatu Poshan*. Theories of *Dhatu Poshan Nyaaya* are not different all together but these have conjugative sequence or different levels of digestion from ingestion of food to metabolism at cell level or whole nourishment process. In this way all theories are not controvert each other while these theories stand as one set of principle of tissue nourishment.

**Key words:** *Aharpak*, *Dhatu Poshan Nyaaya*, Nourishment.

## INTRODUCTION

*Ayurveda* is an ancient science with its holistic approach to life. The very object of this science is the maintenance of equilibrium of tissue elements (*Dhatu*).<sup>1</sup> Because the equilibrium state of tissue element denotes the health of an individual.<sup>2</sup> *Dhatu* are those entities which actually sustain living body by their functions like viz. *Preenanam*, (gratifying effect) by *Rasa*, *Jeevanam* and *Varna prasadanam* (livelihood, and glorious complexion) by *Rakta*, *Lepan* (stoutness/coating) by *Mamsa*, *Snehanam* *Drirhatvam* (glossiness and firmness) by *Meda*, *Dharana* (support the body) by *Asthi*, *Puranam*, *Balam* (filling of the internal cavity of *Asthi* and formation of the chief source of strength) by *Majja*, *Garbhotpadanam* (impregnating principle) by *Shukra*.<sup>3</sup> These Seven entities under this

category are accepted without any debate by Ayurveda. So, the equilibrium of *Dhatu* is necessary for the maintenance of health, and this equilibrium is maintained by a cyclic process of formed, destroyed and reformed of nutritional elements for tissues after proper digestion of ingested wholesome food. All matters including food articles are constituted of five *Mahabhuta*.<sup>4</sup> *Panchbhautika* food contains specific *Agni* to these five *Mahabhuta* known as *Bhutagni*,<sup>5</sup> Which help in digestion of their respective food ingredients and convert the heterogeneous material into homogenous ones.

How ingested food is digested and being homogeneous for tissue elements to provide proper nutrition and maintain them, is scientifically described in the *Ayurvedic* text as *Dhatu Poshan Nyaaya*. These *Nyaaya* are



- 1) *Ksheera Dadhi Nyaaya* (Total transformation as nutrients)
- 2) *Kedari Kulya Nyaaya* (transportation of nutrients)
- 3) *Khale Kapota Nyaaya* (selective uptake)
- 4) *Ek Kala Dhatu Poshan Nyaaya* (simultaneous supply of nutrients to the whole body).

All the theories are pertinent and altogether represent the whole process of tissue nourishment at different levels of metabolism. Even before many authors have been discussed *Dhatu Poshana Nyaaya* in different ways still it needs more appropriate interpretation in light of recent advances in contemporary sciences.

## AIM AND OBJECTIVES

1. To collect and analyze literature of *Dhatu poshan nyaaya*.
2. To study concept of *Dhatu poshan nyaaya* w.s.r. to *Aharpak*.
3. To explain the concept of *Dhatu poshan nyaaya* as per contemporary science w.s.r. to tissue nourishment.

### Source of information

Various Ayurvedic classics and research articles related to *Dhatuposhan* were collected and analysed with special reference to *Ahar-Pak* and nutrition. Contemporary and recent research article regarding nutrition, metabolism, nourishment and *Dhatuposhan* were searched online from google scholar, PubMed, Medline Plus etc.

## REVIEW AND DISCUSSION

### I. Review on *Ahar Pak Prakriya*<sup>6</sup>–

*Paka* is digestion of ingested material. It involves changing form, structure and taste of ingested material. This process of *Pak* passes through three stages. These three stages combined known as *Awasthapaka*, which are as follows–

- a) *Madura Awasthapak*–give rise to the *Madhura Rasa* and accentuates *Kapha*.
- b) *Amla Awasthapak* – give rise to *Amla Rasa* and accentuates *pitta*.
- c) *Katu Awasthapaka* – give rise to *Katu Rasa* and accentuates *vata*.

Ingested food could be *Shadarasa yukta* with predominance of one, two or more *AharaRasa*, but during *Awsthapak* first entire food has to acquires *Madhura* rasa then *Amlarasa* in second stage and *Katurasa* in third stage. When digestion completes its all stages, digested food material gets absorbed end product of food which undergoes metabolism. This process of metabolism takes

place in tissues and organs of living being, where food confirms its ultimate bio-transformation. As all matters are constituted by *Panchmahabhuta*, ingested food is also *Panchbhautik* and possesses own *Bhuutagni* according dominance of *Mahabhuta*. These *Bhuutagni* work on food material to change it's heterogeneous stage into homogeneous to body. After final bio-transformation it gets assimilated in body entities due to action of *Dhatvagni*.

### II. Review on Process of food Digestion as per contemporary science<sup>7</sup>

When food is taken into the mouth, it is moistened and liquefied by saliva. This moistened and masticated food is turned into a bolus. Saliva also moistened the mucus membrane of mouth that facilitates swallowing of lubricated bolus because of mucin of saliva. Salivary amylase acts on cooked or boiled starch and converts it into dextrin and maltose. Maltose converted into glucose by maltase present only in human saliva. Here we can say because of prior digestion of carbohydrate and formation of glucose, may causes sweetness in taste of bolus.

This bolus mixed with gastric juice by peristaltic movements of stomach and turns to the semisolid material known as chyme. Here medium become highly acidic (PH 0.9 to 1.2) due to presence of HCL in gastric juice. Gastric juice acts mainly on proteins Pepsin converts proteins into proteoses, peptones and polypeptides. Pepsin also causes curdling and digestion of milk (casein). Pancreatic juice plays an important role in the digestion of proteins and lipids little bit on digestion of carbohydrates. Chymotrypsin converts proteins into polypeptides, Carboxypeptidase splits the proteins into amino acids, Pancreatic lipase is a powerful lipolytic enzyme. It digests triglycerides into monoglycerides and fatty acids, Nucleases enzymes convert the ribonucleic acid (RNA) and deoxyribonucleic acid (DNA) into mononucleotides. Means complex molecules convert into bimolecular and unimolecular structures, then get absorbed by sodium cotransport.

### III. Interpretation of *Dahtu Poshan Nyaaya*

The *Nyaaya* is fundamental principle of the particular subject given after, examination of that subject with the proper evidences and logic. The *Siddhanta* is a demonstrated truth which is accepted by all and established after multiple experimentation and observation but the *Nyaya* is one's view and is the way a person sees a process happening which varies from person to person. In the case

of the “*Dhatu Poshana*” also a number of theories have been proposed. Thus, all these theories proposed by the *Acharya* 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 “*Dhatu Poshana Nyaaya*”.

### 1) *Ksheeradadhinyaya* (Maxim of The Milk & Curd)

Also known as the *Sarvatmana Parinama Paksha*. The *Ksheeradadhi Nyaaya* has been the first of the theories placed forward to understanding of the *Dhatu Poshana*. According to this *Nyaaya*, the one *Dhatu* transforms into the other successive *Dhatu* just as the milk transforms into the curd so on the basis of this mechanism is termed as “*Ksheeradadhi Nyaaya*”. On the basis on the functioning, we can also correlate this *Nyaaya* with process of bio transformation during *Awasthapak*. So, we can interpret that *Ksheeradadhinyaya* explains how ingested food convert into homogenous form to the body tissue elements. Contemporary science also supports this statement that carbohydrates / polysaccharide present in ingested food completely convert into glucose / monosaccharides (Transformation of complex molecule into simplest), protein into amino acids and so on. As we know that *Pachmahabuta Siddhanta* stated that all matters are *Panchabhautik* in the universe but the *panchabhautik* constitute may differs in matters outside the body and the tissues / organs inside the body based on *Mahabhuta* predominance. So, when specific *Mahabhuta* predominance of *Panchabhautik* ingested food turns into as equal to tissue element / *Dhatu* and organs, it is said homogenous or *Poshakamsha* for particular *Dhatu*. So, *Ksheeradadhi nyaaya* is also known as the Law of Transformation.

### 2) *Kedarikulya nyaya* (Maxim of The Field And The Canal) –

This is also known as the *Kramaparinamapaksha*. The *Kedari* refers to the field while the *Kulya* refers to the canal. This *Nyaaya* likens the nourishment of the *Dhatu* with the irrigation of the different fields with the canal. The water irrigates the nearby field first and then it irrigates the distant ones. This *nyaaya* supports theory of *Rasa Samvahan*. Means after completion of *Awasthapak* ingested food convert into *Prasaadbhag* and *Kittabhag*. *Kittabhag* undergoes *Moksh* or excretion and *Prasaadbhag* or *Rasa* reaches to heart, as *Acharya* mentioned *Tasya Hridayam Sthanam*.<sup>8</sup> Then by the force of *Vyan Vayu*, *Rasa* circulate through *Urdhva*, *Adhoga* and *Tiryaga Dhamani* and nourish tissues.<sup>9</sup> As per modern science after

conversion of complex molecules into simplest molecules they get absorbed and enters in blood circulation. As water needs some pumping force from Persian wheel or motor pump, just like that Heart pumps that nutritive element with blood and it reaches to all cells of body in sequential manner, and provide nutrition. First blood supply reaches to heart itself by coronary artery as heart is nearest element to provide nutrition. Then supply goes to Brain through carotid artery, for upper limb through subclavian artery, intercostal muscles through intercostal artery, stomach supplied by celiac trunk, mesenteric artery to large intestine and so on. Thus it supports the statement of *Kedarikulya Nyaaya*, that *Kulya* (arteries) supply nearest *Kedari* (Tissue field) first than distal parts or tissues. But this whole circulatory cycle takes place in such short time (0.8sec-period of a cardiac cycle) that differentiation of sequence seems quite difficult, so *Kedarikulya Nyaaya* can also be named as the Law of Transmission.

### 3) *Khalekapotanyaya* / Maxim of The Barn & The Bird

According to this *Nyaaya*, the nourishment of the *Dhatu* takes place in particular selective manner on the basis of demand. The nourishing fluid, *AnnaRasa* proceeds further to the different *Dhatu* through different channels. The nearby *Dhatu* extracts its nutrient fraction from the nourishing fluid first and then distant one gets nourished later. This theory is based on the analogy of the pigeons browsing the grains from a field and flying 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, here one more thing to keep in mind that every pigeon will choose the grain according its own choice. This theory supports that each *Dhatu* has its specific nutrient, *Poshakamsha* (Nourishing part). As per modern science every cell has selective permeability, not all nutrient elements are accepted by all type of cells, which supports the theory of *Khalekapota Nyaaya*. When transported blood with nutrients passes through any of cell, it selectively absorbs its own part of nutrition. As described above nearest part is supplied first then distanced part will be supplied and tissue will get its own part of nutrition through selective permeability of cell, this concept supports the theory of *Khalekapota Nyaaya* and this is also known as the Law of Selectivity.

### *Ek Kala Dhatu Poshana nyaya* (Maxim of the Simultaneous Nourishment)

This theory has been propounded by the commentator,

*Arundutta*, according to his perspective no one of these theories fully applicable in explaining the *Dhatu Poshana*. *Arundutta* clarifies that the *AharaRasa* enters in the respective *Srotas* of that *Dhatu* and simultaneously nourishes all the *Dhatu* of the body by the particular fragment of that *Dhatu*.<sup>10</sup> *Acharya Charaka* has also reported that *Vyana Vayu* is said to carry the *Rasa Dhatu* throughout the body simultaneously. As period of cardiac cycle is very short so the order of the circulation of nutrients is tough to detect respectively. It seems as simultaneous nourishment is taking place of all body elements/*Dhatu*.

## CONCLUSION

Theories regarding the nourishment of the *Dhatu* are termed as “*Dhatu Poshana Nyaaya*”.

These theories altogether elaborate process of nourishment.

If we go through whole process, we can classify it into 4 conjugative sequences:

1. Transformation (*Ksheerদ্ধadhinayaaya*)
2. Transportation (*Kedarikulyanyaay*)
3. Selectivity (*Khale-Kapota Nyaaya*)
4. Nutrition (*Ek-kaladhatuposhannayaaya*)

These all theories which were given by different *Acharya* at different period of time can be understand in two senses –

- ✓ First one is that all theories are entirely different.
- ✓ Second one is that these theories are not different all together but these have conjugative sequence by that we can make an understanding that these theories are different levels of digestion from ingestion to metabolism or whole nourishment process.

In this way all theories are not controvert each other while these theories stand as one set to form principle of tissue nourishment.

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