



Dhatu Parinaman - Ayurvedic approach to metabolism

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Abstract

Ayurveda, an ancient Indian system of medicine, offers a holistic approach to health and well-being. Central to Ayurvedic principles is the concept of Dhatu Parinaman, which encompasses the process of metabolism and transformation of bodily tissues. This research article delves into the Ayurvedic perspective on metabolism, examining the role of Dhatu Parinaman in maintaining optimal health. Through an exploration of Ayurvedic texts, scholarly works, and clinical observations, this article aims to elucidate the unique insights Ayurveda provides into the intricate workings of metabolism and its implications for overall well-being.

Keywords: Ayurveda, Dhatu Parinaman, metabolism, Dhatus, Agni, Doshas, holistic health, integrative medicine.

Introduction

As the human body undergoes degenerative changes constantly, it becomes essential to replenish with new material for its continuous upkeep. Thus the need for finding food its accumulation and making it suitable for consumption alone are not enough for the sustenance of life, the most important factor is the utilization of food by the body and its conversion into body tissues and for this process a series of chemical and biochemical changes take place from the moment the food enters the organism through the time nutrition is taken out of it. The process of digestion, circulation and of absorbed essence, selective utilization of the essential constituent, dhatu formation, destruction and maintenance of state of dynamic equilibrium has been described in Ayurveda under the heading DHatu Parinaman.

Dhatu Parinaman is composed of two words; DHatu and Parinaman

The term dhatu is derived from the Sanskrit root-

- ❖ “Du dhatu”
- ❖ “Dha dharanposhanayo”
Means dharana (to support) and poshana (to nourish).
- ❖ Parinaman or Paka

All the changes or transformations in the universe are represented by a single term paka. A paka has been defined in Amarkosh as that which causes conversion or transformation and transmutation. The process of any substance undergoing paka can be explained accordingly by Nyaya and Vaisheshika Darshanas. “When an object is brought in contact with tejas or agni,



karma is stated to occur in the ultimate constituent of that object due to abhigat or nodan of tejas. This karma produces vibhag which results in the destruction of the samyog that existed that is the original gunas undergo changes. Thus, parinama refers to the transformations that happen to the ingested food. The effect of agni at physico-chemical level is decomposition, disintegration and exceleration of various chemical reactions occurring in the body. Agni in humans are classified in 13 kinds; they are Jatar Agni, Dhatvani - 7 dhatu agnis, bhutagni 5 dravya agnis.

The full significance of the concept of metabolism can be appreciated by taking into consideration the fact stated by Chakrapani Datta, that the basic structural factors of the body, such as the rasadi dhatus, unceasingly undergo destruction by their own agnis and these are always being reformed by dhatvahas (nutrients of the dhatus), derived from the four kinds of foods ingested. Similarly modern physiologists claim that, in the course of metabolism, the tissues of the body are being reformed as rapidly as they are destroyed. The materials with which the tissues cells are synthesized are derived from food sources, which are suitably processed during digestion and metabolism. These material stuff which composes the tissues of the body can be described in two ways:

- A. In terms of basic organic and inorganic substances, such as proteins, carbohydrates, fats, vitamins and minerals and
- B. In terms of the chemical structure of the ultimate elemental units (carbon, hydrogen and oxygen).

It should not be assumed that every substance which is consumed as food will straight away contribute to the growth of corresponding tissues of the body. The food substances drawn from the environment are all vijatiya or foreign to the body and they should be suitably processed before they are utilized and made part and parcel of the sharira dhatus, that is, they must be transformed as sajatiya or tissue specific substances. Such a transformation is made possible by Jatharagni, Bhutagni, and Dhwtagni pakas.

Ayurveda classifies food based on its Panchabhautikatva (prithvi, aapa, teja, vayu and akash), CHaturvedatva (peya, leys, bhoja and bhakshya), SHadrasatva (madhura, amla, lavana, katu, tikta and kashaya), Dwividha Viryasya (sheeta-ushna) or Ashtavidhaviryasya, (sheeta ushna snigdha ruksha vishada, picchila, mrudu, tikshna) they end with various gunas.

Acharya Shushruta rightly says that the food composed of all the above qualities when properly digested by the agni is converted into param sukhshma sara (minutus part) that can penetrate the smallest vessel, which is called rasa. This rasa flows from the hriday to the netire body and constantly does tarpan, vardhan, dharan and yapan. But all these functions of ahar rasa can be understood by Anuman, praman as all these actions are done by adrishta hetu kena (meaning can be explained only by its functions and cannot be demonstrated practically).



However, due to the advancement of knowledge by inventions of new diagnostic gadgets like electron microscopes, we are now in the position to explain practically what rishi munis understood by anuman. Hence this adrishta hetu action of ahar ras can be explained in the following way:

1. Jataragni Paka

Our diet consists of food items of six tastes (madhur amla etc.) which according to modern science can be incorporated into carbohydrates into proteins. Carbohydrates basically are composed of food items consisting mainly of madhur rasa. Fats are constituted of avyakta rasa as they are insoluble in water or salivary amylase. While proteins are composed of madhur rasa, amla and katu rasa and other nutrients and electrolytes consist of lavan, katu and kashay rasa.

The carbohydrates (large polysaccharides) which are combination of many monosaccharides are bonded to each other by condensation and mechanism process by which the separation of monosaccharides is done is known as hydrolysis. In the same way the hydrolysis of triglycerides transforms fat into absorbable form. Digestion of proteins also involve hydrolysis. Thus, the physiology of digestion is based on hydrolysis. Therefore, the action of pachak, pitt (jatharagni) the initiator of digestion, starts from when food enters the food processing stage. The salivary amylase (partial digestion of starch, salivary lipase (causing partial digestion of lipase), HCL (which cause partial breakdown of proteins) bile juice (doing hydrolysis of proteins to amino acids and carbohydrates to glucose), all come under the spectrum of jataragni paka. The main role of jataragni paka is therefore only hydrolysis or breakdown of food from complex substances to simpler molecules. This jataragni paka also called as the awastha paka that is temporary state of food, digestion and these are three (3) in number:

A. Madhura awastha paka

In this stage, the food broken down yields madhur rasa. Carbohydrates and proteins are converted into madhur awastha paka. The action of salivary amylase is to reduce the long chain of polysaccharides to the disaccharide maltos, the trisaccharide maltotriose and short chain glucose polymers. The salivary amylase in the swallowed food continues to act on the starches for an hour after intake. If a person eats a simpler carbohydrate rich diet it will be readily absorbed in the bloodstream as a small amount of absorption occurs in the stomach. The signs of this awastha paka include heaviness in the stomach and feeling of sleepiness. This is justified by the following reference given in the biochemistry - "serotonin (neurotransmitter) has a calming effect on the brain. When tryptophan is available in the brain in excess quantity, serotonin is generated to induce sleep. When ordinary proteins are taken, all amino acids are available in blood. This causes traffic jams in the amino acids transport system in the brain cells. tryptophan being the bulkiest amino acid is therefore taken up slowly. However when a carbohydrate rich diet is taken, insulin secretion is increased which



lowers the amino acid concentration in blood. So, tryptophan easily enters the brain cells and results in sleep.

B. Amla Avastha paka

A stage When the food is in the stomach and travels to the duodenum in the stomach, the churning of the food mixes it with the gastric juice and HCL, hydraulising the proteins. Then it moves to the duodenum and is acted upon by bile juice and pancreatic secretions. In the stage the ingested food undergoing digestion attains acidic nature in stomach and thereafter in the small intestine there occurs the release of "accha pitta". The name amla is appropriate for this stage because proteolytic and lycolytic enzymes act here along with amylolytic ones. Acidic taste is a common feature in all acids in general.

C. Katu Avastha Pak

After the completion of the second stage of digestion, the digested material gets absorbed. The surfaces of the duodenum and jejunum have many folds called Valvulae Conniventes (folds of Kerkring) and villi which increase absorptive surface area. Substances are absorbed by the physical process of pinocytosis. After the absorption of nutrients the remaining portion reaches the large intestine. Here it experiences the drying effect of Agni and there is formation of solid fecal matter along with the release of vata of katu nature. In the large intestine the absorption of water makes the remaining undigested material hard which is called feces. Due to the activity of bacterial flora some pungent gases like methane and ammonia are also produced here. This represents the katu nature of the vata released during this third stage.

The pachaka pitta which performs the above function of digestion is pancha bhautik in nature thus the Bhutagni in the pachak pitta digests its own substrates of food from the panch bhautik ahara. Accordingly, the prithvi ansh in food is digested by prithvi agni, the apya ansha is digested by apya agni and so on. It can be seen that during madhura avastha paka the prithvi agni and apya agni are at work, in the amla avastha paka the tejo agni is digesting and in the katu avastha paka vayu agni and akash agni are acting on the substrate.

Conclusion

The conclusion summarizes the key insights gained from exploring Dhatu Parinama as an Ayurvedic approach to metabolism. It underscores the importance of understanding metabolism through a holistic lens and the potential of Ayurveda to contribute to our knowledge and management of metabolic disorders. The article concludes by emphasizing the need for further research and collaboration between Ayurveda and modern science to enhance our understanding of metabolism and its impact on human health.