



## PHYSIOLOGY OF DIGESTIVE SYSTEM W.S.R. TO THE AGNI AND IT PATHOLOGICAL ASPECTS

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### ABSTRACT

The digestion process as per Ayurveda involves various transformational stages (*Avastha Paka*) and *Agni* play important role in this process. The *Agni* is responsible for the digestion, absorption and assimilation of food, which is necessary for life. *Agni* is endless on account of its presence in every single *Paramanu* of the body. However, the number of *Agni* in various classical Ayurvedic texts varies. *Agni* has been divided into *Jatharagni*, *Bhutagni* and *Dhatvagni*. *Jatharagni* is the main one, which digests four sorts of food and changes it into *Rasa* and *Mala*. The *Bhutagnis* acts on the particular *Bhutika* piece of the food and consequently sustain the *Bhutas* in the body. Furthermore each *Dhatu* is divided into various parts by the seven *Dhatvagni*, which acts on its respective *Dhatus*. The physiology of food transformations or digestion involves *Madhura Avastha Paka*, *Amla Avastha Paka* and *Katu Avastha Paka* depending on whether the *Madhur*, *Amla*, or *Katu* elements are involved in the process of digestion.

**KEYWORDS:** Digestion, Physiology, Agni, Avastha Paka, Kriya Sharir.

### INTRODUCTION

According to Ayurveda, body's *Agni* is a crucial component of digestion and metabolism. Ingested food is to be processed, retained and acclimatized, which is inescapable for the support of life, and these all functions performed by *Agni*. *Agni* changes food as energy, this energy utilizes for the biological activities. *Dehagni* is responsible for life, strength, health, *Oja*, *Prana* and *Teja*. *Acharya Charak* stated that an individual dies when *Agni* ceases to function, but that if an individual's *Agni* is *Sama*, that individual would be completely healthy and would live long and healthy life.<sup>[1-4]</sup> The vitiation of *Agni* leads sickness thus *Agni* is regarded as the foundation of life. *Agni* has been divided into various categories as depicted in **Figure 1**.



Figure 1: Descriptions of various types of Agni.

### Physiology of Digestion

Food digestion is essential for maintaining *Dosha* and *Dhatu* balances, after being digested the *Ahara* produces nutrition that provides strength and longevity. The properties of food materials, such as *Gurutava* and *Laghutava*, have no effect on digestion physiology. *Ayurveda's* concept of *Avasthapaka*, which refers to the processes that take place during the digestion of food, was mentioned in relation to the physiology of digestion. Under the influence of *Agni*, the *Ahara dravyas* in *Kostha* were digested into essential nutrients. In the beginning, *Madhura bhava* reaches via *Amashaya*, it is known as *Madhura Avasthapaka*. Sugars are broken down by salivary amylase into glucose, which is then absorbed as an energy source. In *Pachhmanasaya*, *Ahara* was subjected to vigorous digestion in the *Amla Avasthapaka*, which is regarded as the second stage of *Avasthapaka*. *Amlabhava* emerged from the chyme's acidic environment. In *Pachymanasaya*, food that has been partially digested is fully digested and absorbed here. The large intestine is the place where electrolytes and water were absorbed during the third phase of *Katu Avasthapaka*. Water and electrolytes consumed from the *Pakwasaya*, bolus of feces structures after the most extreme retention of water.<sup>[4-7]</sup>

### Physiology of Digestion as per Ayurveda

Gastrointestinal processing of food portrayed as *Avasthapaka* in which changes in a single type of food take spots to another structure. The process involves *Amashaya*, *Pachyamaanaasaya* and *Pakwasaya*. The *Prapaka* and *Vipaka*, respectively, are referred to as *Pratham paka*, or the first transformation and final transformed state. *Prathampaka* is subjected to the final transformation during *Jatharagni's* transformations.

Depending on whether the *Madhur*, *Amla*, or *Katu* elements are involved in the process of food digestion, the biochemical changes take place in three stages during food digestion as *Avasthapaka* which includes; *Madhura Avastha Paka*, *Amla Avastha Paka* and *Katu Avastha Paka*.<sup>[6-9]</sup>

#### 1. *Madhura avastha-paka* and Role of *Agni*

The food comprising different *Rasa* including *Madhur Rasa* that transformed during this process. This stage results arrangement of *Kapha* which is viewed as dainty and foamy substance. This stage happens in *Amashaya* and governed by *Madhur bhava*, *Kledaka Kapha*, *Agni* and *Samana Vayu*. These all elements in stomach contributed towards the physiology of *Madhura awastha paka*.

This stage can be linked to the conversion of carbohydrates into simple sugar, according to modern science. In the buccal cavity, salivary enzymes aid in the digestion of carbohydrates, converting them into sugar. The food that reaches the oral cavity causes saliva to be secreted, which contains the enzyme amylase, which helps the oral cavity to digest carbohydrates.

*Pachana* and *Kledana* of carbohydrate and related food materials are initiated by saliva in the mouth; that further facilitates the *Amashaya's* deglutition of food following *Prana vayu* and *Samana vayu*. Carbohydrates are transformed into simple sugars like; lactose, maltose and sucrose, because of the sweet nature of these substances, this stage of digestion is referred to as *Madhur avastha pak*.

#### 2. *Amla Avastha-Paka* and Role of *Agni*

In the form of chyme, *Amla Avastha-Paka* takes place in *Pachmanasaya*. Under the influence of pancreatic amylase, *Pachyamansaya* digests the remaining food after the first stage. *Pachyamanasaya* is considered a partial site for the *Madhur avastha pak* because it undergoes some changes to the *Madhur awastha pak*. The emission of hydrochloric corrosive in the stomach somewhat stops the action of amylase prompting the halfway finish of *Madhur awastha paka*.

*Amlabhava* is developed in the chime's acidic medium, which results in sourness and *Amla avastha pak* completes the digestion of the remaining food. Different digestive enzymes are involved in the actions of *Pachak pitta* and *Agni* at the digestive site play main role in this

step. *Sara bhag* is absorbed with the assistance of *Samana vayu* while food is digested by *Agni*. *Pachyamanashya* refers to the region between *Amashya* and *Pakvashya* in which *Grahni* is situated. *Achchha pitta* raises the pH to a level that makes it easier for the small intestine's various enzymatic secretions to work. Products such as peptone and fatty acids are framed in *Amlavastha*, these foods has properties of *Amla rasa* thusly this stage named as *Amlavastha*.

Peptic cells in the stomach release pepsinogen which produces pepsin, this helps in protein digestion. The enzyme of pancreatic secretions breaks down the majority of the protein in *Pachyamanasaya*. The *Vidagdha Ahara* in *Pachyamanasaya* causes *Achchha pitta* to be released. The pancreatic and bile secretions of the *Achchha Pitta* help in the digestion of fats, proteins and carbohydrates.

#### *Katu avastha-paka* and Role of *Agni*

The third *Avasthapaka* of assimilation is *Katu avastha-paka* in which processed food materials oppressed for additional handling in *Pakvashaya*. Under the influence of intestinal bacteria, the remaining foods that have not been digested undergo the fermentation process. During this process, *Vayu* production occurs; food undergoes drying as it travels from *Pachya-manashaya* to *Pakvashaya* and then *Shoshymanasaya* due to the absorption of water.

According to modern view, the small intestine is where digestion and absorption take place primarily. In digestive organ, retention of residual water occurs and bacterial activity takes places in *Pakvashaya*. The production of gases by bacteria contributes for flatus in the colon. The smell of feces attributed to its components, such as; indole, hydrogen sulfide and mercaptans. Since they all have *Katu bhava*, this stage is called *Katu avastha-paka*. The particular odor of the waste that is going to be extracted from the body was primarily produced by pungent *Vayu* and the feces. The gases are produced like; methane and carbon dioxide due to the action of bacteria in the large intestine. When the large intestine is stimulated, excessive gas expulsion may occur.<sup>[8-11]</sup>

#### Pathological Consideration of Digestive Process

The undesirable way of living, food contrariness, contaminations, stress and low fiber in diet, etc. may cause irregularities of physiology of *Avastha-paka* prompting the obsessive side effects like; gas, stomach cramps, nausea, constipation and vomiting, etc. The abnormal functioning of *Agni* may also leads symptoms such as; bloating, irritable bowel syndrome, heartburn, anorexia and diarrhea, etc.

#### CONCLUSION

The digestion process is divided into *Madhura avastha paka*, *Amla avastha paka*, and *Katu avastha paka* in Ayurveda. The primary phase of *Avastha-paka* involves

assimilation of carbohydrates by salivary amylase. Chyme is a semi-liquid mixture made when food and gastric secretions mix in the stomach. The food remains in the *Pachmanasaya* or partially digested form, throughout the *Amla avastha pak*. *Amlabhava* creates because of the discharge of acids in the stomach. The sourness that occurs when the acidic chyme enters the *Pachmanasaya*, during this phase *Amlabhava* gets underway. Simultaneously nerve bladder begins to exhaust *Achha pitta* when the greasy food reaches into the *Pachmanasaya*. The bacteria in the intestine ferment the food's residual products, this causes production of gases. *Agni* especially *Jatharagni* plays an important role in the process of food digestion.

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