Physiological Importance of Pachakpitta in Aaharpaka (Digestion) in Modern Perspective

Neha Sajwan¹, Rajesh Kumar Sharma,² Dinesh Chandra Sharma³

1-Post graduate Scholar, Associate Professor, P.G. Department of Kriya Sharir, Dr. sarvepalli Radhakrishnan Rajasthan Ayurveda University, Jodhpur, Rajasthan, India
2-Professor and H.O.D, P.G. Department of Kriya Sharir, Dr. sarvepalli Radhakrishnan Rajasthan Ayurveda University, Jodhpur, Rajasthan, India
3-Associate Professor, P.G. Department of Kriya Sharir, Dr. sarvepalli Radhakrishnan Rajasthan Ayurveda University, Jodhpur, Rajasthan, India

ABSTRACT:
The tridosha theory drives Ayurveda science. Pitta is one of the three doshas and is responsible for digestion and metabolism. There are five forms of Pittadosha: Pachaka, Ranjaka, Alochaka, Bhrajaka, And Sadhakapitta. Pachakapitta is in charge of food digestion, Sara and Kitta Vibhajan, and nourishing the Agneya component of Pitta in various sections of the body. Jatharagni is another name for it. Pitta'sagni aids digestion and then separates the Sara and Kittabhaga. Because of its location, it nourishes and strengthens Pitta. PachakaPitta is to blame for AaharPachan, as our book clearly demonstrates. On the other hand, current or contemporary science has proven via several research those distinct digestive fluids are responsible for food digestion. All enzymes involved in digestion, such as amylolytic, proteolytic, and lipolytic enzymes, can be compared to pachakapitta, as its activities suggest. Only a few works on pitta's conceptual elements have been mentioned. The importance of pachakpitta in food digestion is discussed in this article. The core resources for this study were gathered from Ayurvedic classics with available commentaries, as well as modern medical science textbooks to gain a better grasp of the concept and its usefulness in digestion.

Keywords- Pachak pitta, Agni, Digestion, Digestive enzymes

INTRODUCTION
Ayurveda defines a healthy existence as one in which the humours and metabolic phase are in balance, the biological actions of the tissues and excretory products (i.e. physical stage) are in balance, and the soul, senses, and mind (i.e. mental state of the body) are in balance. The tridosha concept is purely theoretical, and no single substance or structure can represent a dosha. Pitta is one of the three doshas and is in charge of digestion, metabolism, heat production, and other forms of energy. On the basis of location, the pitta dosha is split into five types: paachak, ranjak, saadhat, alochaka, and bhrajakapitta. When
conducting various types of physiological functions, these entities collaborate and coordinate with one another. As a result, a proper knowledge of the functions of *pachakapitta* from a modern perspective is required. Because the roles of *Pachakapitta* vary, it cannot be represented by a single entity at all times. *Ayurveda* is a science that is built on the concept of functional understanding once again. In today's world, students, particularly those in their first year of Bachelor of Ayurvedic Medicine and Surgery, have a difficult time grasping the notion of *Ayurveda*. In terms of supporting current literature, there is no precise correlation of *Pachakapitta* described in Ayurvedic literature. To comprehend the profundity of Ayurvedic principles on the criterion of health, there is a greater necessity for *Ayurveda* science. We are attempting to identify anatomical structures based on their physiological roles as mentioned retrospectively under the function of *pachakapitta* in this review.

*Dosha, Dhatu, Mala* together forms the basis of the body. The balance of these entities represents the healthy state and imbalance will cause various diseases.

In normal circumstances, each *Dosha* will execute its own functions, with each *Dosha* having its own unique place. The distinct functions performed by individual *Doshas* in various locales have been highlighted by discussing the various *Sthana* of each *Dosha*. The several forms of *Dosha*, as well as their location and function, have been discussed.

To comprehend the physiology of *PachakaPitta*, a brief physio-anatomical comprehension of the Gastrointestinal system with relation to chemical and physical digestion is required. Following intake through the mouth, food travels through the digestive tract, where it is broken down into small absorbable elements.

The involvement of local hormones in mechanical chemical digestion is crucial. *Gastrin*: Stimulates gastric glands to secrete more pepsin and hydrochloric acid in gastric juice; accelerates gastric motility; promotes gastric mucosa growth; stimulates secretion of pancreatic juice, which is rich in enzymes; stimulates islets of Langerhans in the pancreas to release pancreatic hormones. *Secretin* inhibits gastric juice secretion; inhibits stomach motility; causes constriction of the pyloric sphincter; increases the efficacy of cholecystokinin's action on pancreatic secretion.

*Cholecystokinin*: Increases the secretion of enterokinase; Inhibits gastric motility; Increases the motility of the intestine; Augments the contraction of the pyloric sphincter; Plays a vital role in satiety by suppressing appetite; Induces pharmacological tolerance to opioids. *GIP* (gastric inhibitory peptide) stimulates insulin release by beta cells in the pancreas' islets of Langerhans. When a chime with glucose enters the small intestine, it causes insulin secretion. It's dubbed glucose-dependent insulinitropic hormone because it inhibits gastric juice secretion and gastric motility. *Somatostatin* inhibits the secretion of growth hormone (GH) and thyroid stimulating hormone (TSH) from the anterior pituitary; inhibits gastric secretion and motility; inhibits pancreatic juice secretion; inhibits the secretion of GI hormones like *Gastrin*, *Cholecystokinin* (CCK), *Vasoactive intestinal polypeptide* (VIP), and *Gastric inhibitory peptide* (GIP).

**Aaharapachana And Aahararasa Formation:**

*Aaharapachana* is the work of Agni. By Acharya Sushrut and vaghhat site of pachak pitta is pakwamashay Madhya (between large intestine and stomach). Ancient literature describes 13 different varieties of agni. *Jatharagni*, *Blutagni*, and *Dhatavagni* are these. Following the ingestion of *panchabhouitika*, *aharaagni* reacts with it, causing the *dhaatus* to form and be fed. The food consumed is transported to the *koshtha* by the *pranavata*. The liquids cause the meal to breakdown, while the mucous substances cause the food to become soft. *Kledakakapha* carries out this action. The *pachakagni* (digestive enzymes) are intensified by the *samanavata*, which also ensures adequate food digestion. The location between *Pakwashaya* and *Amashaya* is the home of *PachakaPitta*. In this region various *srotas* secrete various *pachakasrava*. *GrahaniPradesh* where *AnnaPachana* occurs also called as *PittadharaKala* is stated as the main *Sthana* of *PachakaPitta*.

The process of digestion is in charge of disassembling complicated food particles into simpler ones. The digestive process starts in the mouth, but because food stays there for a shorter period of time, complete digestion does not happen. In the stomach, incomplete digestion also does not take place. The small intestine is where digestion ends. The small intestine is where the majority of food products that have been digested are absorbed. The duodenum, where the majority of digestion takes place, can be linked to the *grahani* in *Ayurveda*. The digestion of protein, carbohydrates, and fat is aided by a variety of digestive hormones and enzymes.

*Chymotrypsin* and *trypsin* create peptides from protein breakdown. Some peptides are split into individual amino acids by the enzyme *carboxypolypeptidase*. *Amylase* in pancreas produces disaccharides and a few trisaccharides.
by hydrolyzing starches, glycogen, and other carbs. Pantothentic lipase fatty acids and monoglycerides are produced by hydrolyzing neutral fat. Esterase of cholesterol cholesterol esters are hydrolyzed. Phospholipase splits phospholipids into fatty acids, Amylase in saliva create maltose from starch, Maltase converting glucose from maltose. Lingual lipase creates fatty acids and diacylglycerol from milk fat triglyceride, Pepsin proteases, peptone, and polypeptides from protein stomach, lipase fatty acids and glyceroil from butter's triglyceride stomach, amylase transforming starch into maltose and dextrin, Gelatinase Combining meat’s collagens and gelatin to create peptides, Urase Ammonia Production from Urea.  

**Vibhajana Of Sara And Kitta**

It refers to the process of separating the nutrients from the waste products produced during food digestion. The digestive enzyme pachakapitta is started by samanavayu for hydrolysis. Following that, garbage and nutrients are separated. With the aid of samanavayu, nutrient products are absorbed, and apanavayu eliminates waste materials.  

**Nourishes Various Pittasthana**

Due to its unique location (between the Amashaya and Pakwashaya) and innate strength, PachakaPitta, also known as Jatharagni, enhances the actions of other Pitta Sites that are Present Elsewhere in the Performance of Metabolic Functions of the Body. The digestive enzymes that aid in the breakdown of food can be compared to pachakapitta. 

The development of raktaadhutu is aided by the ranjakapitta, which is found in the yakrit and pliha. Vitamin B12, folic acid, pyridoxine, vitamin C (which aids in iron absorption), and minerals like iron and copper, which are mostly obtained from diet, are factors that control erythropoiesis and the maturation of RBCs. Iron, folic acid, vitamin B12, and other nutrients cannot be efficiently absorbed if proper food digestion is not achieved. 

SadhakaPitta, who resides in Hridaya, aids in satiating mental wants. Ajirna will happen if digestion isn't done properly. Murchha-like symptoms emerge during ajirnabhrama, impairing the function of sadhakapitta. The bhrajakapitta, which is found in the twak, aids in the absorption and digestion of the substances used in mardan, sechana, avagahana, and the expression of shades in the skin. All chemical reactions are mostly caused by pachakapitta. Bhrajakapitta benefits from it for this kind of function. Pachakagni are dependent on Dhatavagni. Other agni become more and less severe as a result of pachakagni’s deterioration. Every cell in the body receives food from pachakapitta, which aids in the production of nutrient products. Bhrajakapitta performs its job when the cell has grown properly. The lipid-containing material moves into the cell’s membrane. 

**Absorption Of Aaharrasa**

It moves toward the kostha with the aid of pranavayu after ingesting aahara. The location of the pachakagni is grahahi, also known as pakvanashaya or pittdharakaka. Amashaya’s Samanavayu stimulates the pachakagni to aid in food digestion and separation as well as shoshyati, or the absorption of water and nutrients. Movement, which is the primary role of vata, is necessary for the absorption of nutrients and water. As a result, both samanavata and pachakagi are in charge of absorption here.  

**Pachakagni And Pachakapitta**

Without a comparison with Pachakapitta, the discussion of Pachakagni cannot be concluded. As we see the features and functions of Pachakagni and Pachakapitta, it seems similar to each other. There is no area exist of Pachakagni without Pachakapitta, because there is increased digestion and combustion in the body due to Ushnaguna of Pachakapitta, the therapy of Pachakagni is also employing AaharaVihara contrary to Pachakapitta. According to Caraka, only Pachakagni, which is located in Pachakapitta, can have positive or negative effects depending on whether it is working normally or abnormally. Since Pitta performs Dahana (burning or oxidation), Pacana (digestion), and other similar acts to those performed by Re, Pitta is known as Antaragni, according to Acharya Sushruta. 

Acharaya Maarich has also underlined that when Pachakagni is normal, it can have a positive or negative effect on the Pachakapitta. Since Pitta performs re-like acts, such as Paka, Pacana (Digestion), Dahana ( Burning), Tapana (Heat production), Parinamana (Conversion), Paravratti (Transformation), Prakasana (Illumination), Ranjana or Varnakara (Colouration), and Prabhakara, it has been referred to as Agni (re) in Ayurveda (to cause luster). According to Chakrapani, the term “Pittantargata” merely refers to the phenomena of heat that is connected to re, not that the Pitta of the body is an ingre. Inferentially, heat is believed to be related to Pitta’s function. The Ayurvedic idea of Agni, which relates to the various roles assigned to Pitta, is all-inclusive organizations in charge of Aaharapacana. The separation of the Sarabhaga (nutrient fraction) of the
Ahara from the Kittabhaga (the indigestible or undigested residue of the food) as well as metabolic events, energy, synthesis, and maintenance of metabolism occur in the Kostha (equivalent to gastro-intestinal digestion). According to Sushruta, pitta, which is situated in a region between Amasaya and Pakvasaya, is in charge of the digestion of the four types of food consumed by living things and the subsequent expulsion of the leftovers in the form of urine and farces.

It contributes to and enhances the actions of other pitta places by being situated in its own location (between Amasaya and Pakvasaya). As a result, this pitta is referred to as "Pachakagni". In addition, Pacakapitta, also known as Jatharagni, Kosthagni, Antaragni, Pachakagni, Dehagni, etc., is considered to understand photo and chemo synthesis processes while being situated in its own location between Amasaya and Pakvasaya.

pachakagni participates directly in food digestion while also supporting and enhancing the actions of the remaining pittas that are found elsewhere in the body.

DISCUSSION

Basically Vata, Pitta, Kapha constitute three regulating systems i.e. neurological, endocrine and immunological system respectively of all biological system. All Acharyas refer to pachakapitta, one of the five forms of pitta, as jatharagni. The grahanti-based Pachaka Pitta is in charge of pachan, Sara Kitta Vibhajana, and Anugrahana of Other Pitta. Digestion is mostly the responsibility of pachakapitta. Digestion is primarily caused by three things, samanavayu, pachakapitta, and kledaka kapha. Pachakapitta is stimulated by samanavayu to aid in food digestion and the separation of nutrients from trash. Food's breakdown and suppleness are aided by kledakakapha. After the digestion of food Pachakagni and samanavayu by munchana action assists in propelling chyme in their respective direction i.e., waste materials towards large intestine and saarabhaag is propelled towards intestinal villi. By the soshvati action of agni, saarabhaag is absorbed through intestinal villi and arrived the superior mesenteric vein.

It travels from the superior mesenteric vein through the liver and samanavayu to the heart via the portal vein and inferior vena cava. From the foregoing information, it is possible to compare the physiological functions of Trypsin, Chymotrypsin, Carboxypolypeptidase, Pancreatic Amylase, Pancreatic Lipase, Cholesterol Esterase, Phospholipase, Maltase, Pepsin, Gelatinase, and Urase to those of PachakaPitta as described by Acharyas because pachak pitta has important role in the digestion of four types of food as all these digestive enzymes also helps in the same way, so we can compare these enzymes with pachakpitta. The generation of heat and other forms of energy during chemical reactions in our bodies is referred to as the Pittadosha. Pachakapitta plays a significant part in digestion and aids in catalysing other pittas’ other chemical reactions or functions.

CONCLUSION

After a thorough examination of PachakaPitta, it became apparent that each notion related to PachakaPitta had its own significance and was difficult to achieve on a single point. Before food is swallowed, the teeth chop and grind it, and then the stomach and small intestine's smooth muscles churn it. Food molecules softened and thoroughly combined with digestive enzymes as a result. The bulky lipid, protein, carbohydrate, and nucleic acid molecules in food are split into smaller molecules by hydrolysis during chemical digestion.

The functioning of digestive enzymes and gastrointestinal hormones can be connected to Pachaka Pitta's goals. The duodenum and Pakvaamashaya Madihya are the Sthana of Pachaka Pitta, respectively where even more food particles are digested. Due to the fact that all of the digestive enzymes, such as trypsin, chymotrypsin, maltase, and lactase, aid in the digesting process, pachakpitta, also known as pachakagni (digestive fire), aids in digestion.

Acknowledgements - Nil
Conflict of interest - None
Source of finance & support - Nil

ORCID
Neha Sajwan, https://orcid.org/0000-0002-0151-8480

REFERENCES

How to cite this article: Sajwan N, Sharma RK, Sharma DC “Physiological Importance Of Pachakpitta in Aaharpaka (Digestion) In Modern Perspective” IRJAY.[online]2022;5(9); 132—136.Available from: https://irjay.com DOI link- https://doi.org/10.47223/IRJAY.2022.5923