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SIGNIFICANCE OF DOSHA IN VARIOUS AREAS OF THE GASTROINTESTINAL TRACT

Ayurveda

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ABSTRACT

Ayurveda is based on the theory of *Tridosha*. *Tridosha* theory is unique to *Ayurveda*. In *Sanskrit*, the term *Dosha* refers to the body's regulatory functional factors. These *Doshas* are said to be responsible for the maintenance of homeostasis in the body that is essential for being healthy, and health is nothing but a state of equilibrium of these *Tridosha*. These *Doshas* also influence an individual's psycho-physiological makeup. *Dosha* has the ability to vitiate various bodily tissues when they are out of balance, which can lead to diseases. *Tridosha* is a theory, and no single entity or structure can represent a *Dosha*. Different *Doshas* are involved in the digestion process at various levels, which can be correlated with modern science through careful study. Acceptance, digestion, and absorption of food are all functions of the gastrointestinal tract and related organs. The waste by-products of digestion are expelled from the large intestine's terminal portion. As a result, excretion is included among the functions of the gut.

KEYWORDS

Ayurveda, Sharirika Dosha, Gastrointestinal Tract and Digestion

INTRODUCTION –

While digestion and subsequent events maintain nutrient levels in the body and allow the formation of tissues and useful components that run body dynamics. Excretion aids in the cleansing and detoxification of our systems. *Doshas*, or functional components of our system, such as *Vata*, *Pitta*, and *Kapha*, are involved in carrying out these gastrointestinal functions, according to *Ayurveda*. Different *Dosha* subtypes are involved in various gut activities. Hunger is one of humanity's most basic instincts. We've all evolved into hunters. Hunting for food has always been a primary goal of life since its inception. The primitive man survived by hunting animals and gathering fruits and roots. In this modern era, we also hunt, but in a different way. We either grow our own food or buy it. We need money to buy it, and we need money to find a good job. *Ayurveda* refers to it as *Prana Eshana* (constant seeking of a living) and *Dhana Eshana* (constant seeking of a living) (constant search for earning). These are the first two important instincts of human evolution, with the third being *Paraloka Eshana* (constant search for methods or routes for getting salvation i.e., to escape from the vicious cycle of life and death)[1]. For ethical survival and adaptation to civilizations, we must do all three constantly. *Dosha* functions begin with food consumption, i.e., from the mouth to excretion, i.e., at the rectum and anus levels. GIT functions, like those of other systems, are carried out effortlessly and without difficulty as long as the *Doshas* are in balance. However, when these *Doshas* are disrupted, the entire chain of mechanisms fails, resulting in hyperactivity or under activity at various levels of GIT. This causes a variety of damage, eventually leading to a variety of gastrointestinal disorders.

Involvement of different *Doshas* in various areas of the digestion process: -

***Prana Vayu* and *Udan Vayu* involvement**

Prana Vata and *Udana Vata* allow food to enter - *Prana Vata* in the head should be normal if food must be gulped down the food pipe. Food cannot be swallowed if *Prana Vata* is out of balance. However, it is insufficient. It requires cooperation from the chest *Doshas*, particularly *Udana Vata*. *Udana Vata*, which is located in the chest, tends to move upwards and has the opposite functional direction as *Prana Vata*. *Udana Vata* must relax and allow *Prana Vata* to push food down into the oesophagus and into the stomach.[2] If the chest *Vata* opposes the head *Vata* and is out of balance, food cannot travel to the stomach. In fact, *Vata* in the chest pushes food in the opposite direction and throws it towards the mouth. This leads to vomiting, gerd etc conditions. *Avalambaka Kapha*, a subtype of *Kapha* located in the chest that allows free expansion of the chest to allow downward travel of food towards the stomach, cooperates with these two *Vatas*.

The *Hrudya* and *Maha Strotas* are the origins of *Pranavaha Strotas*.[3] *Prana* is found in the head, thorax, trachea, tongue, mouth, and nose, and it performs functions such as spitting, sneezing, eructation, respiration, deglutition, and so on.[4]The *Prana* is the *Vayu* that governs the cavity of the mouth. Its purpose is to force food down the throat.[5] Thus, *Prana Vayu* governs all nervous activities involved in the deglutition process. Swallowing involves three stages 1. Voluntary stage: food is voluntarily squeezed or rolled posteriorly into the pharynx. 2. Pharyngeal stage, *Prana Vayu* governs the impulses transmitted from the posterior mouth and pharynx to the medulla oblongata associated with the tractus solitaries to initiate the pharyngeal stage of swallowing. The deglutition or swallowing centre refers to the areas of the medulla and lower pons that control swallowing. The 5th, 9th, 10th, and 12th cranial nerves, as well as a few superior cervical nerves, carry motor impulses from this centre. 3. Peristalsis occurs in two stages during the oesophageal stage: primary peristalsis and secondary peristalsis.[6] Despite deglutition, *Prana Vayu* is involved in hunger stimulation via the hypothalamic hunger centre, as well as the cephalic phase of gastric secretions, as the head constituting the senses is the site of *Prana Vayu*, which is responsible for the conduction of impulses of sensations such as sight, odour, and hearing about any food items. Even before food enters the stomach, the cephalic phase occurs as a result of the sight, smell, thought, or taste of food.[7] *Prana Vayu* is also involved in the regulation of the masticatory process, which is mediated by the motor branch of the 5th cranial nerve.

***Vyana Vayu* involvement**

Vyana Vayu flows throughout the entire organism. *Vyana Vayu* is said to be all over the body and is in charge of *Gati* (movements of all kinds), relaxation, contraction, twinkling, and so on.[8] In the context of digestion, its location ranges from the oesophagus to the transverse colon. The action of the *Vyana Vayu* is associated with five types of muscular movements.[9] In his commentary on *Sushruta Samhita*, *Dalhana* explores the five movements as relaxation (expansion), contraction (flexion), lowering down, lifting, and lateral movement of any part of the body. It is similar to the Peristalsis movements that occur in the gut. Peristalsis is an inherent property of many syncytial smooth muscle tubes found in the bile ducts, glandular ducts, and a

variety of other smooth muscle ducts/tubes involved in digestion. Distension of the gut is the most common stimulus for intestinal peristalsis. An active myenteric plexus is required for effective peristalsis.[10] *Vyana Vayu* governs the activities of the myenteric plexus, which is in charge of conducting contraction and relaxation movements in the GI tract muscles.

Samana Vayu involvement

Samana Vayu is found in sweat, humour, and water channels, lateral to the seat of *Agni* (digestive enzymes), and provides strength to the digestive fire.[11] Activate the digestive fire and assist the *Strotas* (channels) in their functions, including food retention in the alimentary tract, digestion, separation of essence and waste, and movement of waste downwards.[12] *'Samano Agni Balaprada*,' where *Agni* is *Jatharagni*, which is present in the *Jatharagni Kshetra*, i.e., *Grahani*. *Grahani* is said to have lived between *Pakvashaya* and *Aamashaya*.[13] When semi-digested food exits the stomach, a liquid form of *Pitta* known as *Accha Pitta* is released.[14] From the pancreas digestive juices for the digestion of protein, carbohydrates and fat are secreted into *Grahani* i.e., very important. *Samana Vayu* regulates the secretion of various digestive juices. The *Samana Vata*, which has an inherent ability to strengthen the *Agni*, intensifies the digestive enzymes and plays a significant role in the proper digestion of food that is consumed on time and in an appropriate quantity, resulting in longevity. At last, it can be concluded that *Samana Vayu* can be compared with Meissner's plexus which regulates the secretion of enzymes from the stomach and duodenum.

Apana Vayu involvement

According to legend, *Apana* is found in the testicles, urinary bladder, penis, umbilicus, thighs, inguinal region, and anus and plays an important role in the expulsion of *Samirana* (flatus), *Shakrit* (faeces), *Mutra* (urine), *Shukra* (semen), *Garbha* (foetus), and *Artava* (menstrual fluid).[15] Is in charge of absorption in the colonic region. When the *Pakva* part (the nonabsorbable remnant part after nutrient absorption) reaches the *Pakvashaya*, *Agni's* drying effect converts it into a solid mass.[16] Defecation is initiated by defecation reflexes in the rectal wall, which are mediated by the local enteric nervous system. There are two types of reflexes observed. The first is an intrinsic reflex mediated by local ENS in the rec wall. When faeces enter the rectum, there is distention of the rectal wall. Sensory signals initiate peristalsis from the descending colon to the sigmoid and rectum via the myenteric plexus. These waves cause the internal sphincter to relax. Defecation occurs simultaneously if the external anal sphincter is open. The parasympathetic nervous system initiates the other defecation reflex. After faecal matter enters the rectum, the nerve endings are stimulated, and signals are transmitted to the spinal cord via afferent nerve fibre. These parasympathetic signals travel through the pelvic nerve, increasing peristalsis and relaxing the internal anal sphincter. Defecation occurs when the external sphincter is voluntarily relaxed. Sympathetic fibres from the superior rectal and hypogastric plexuses stimulate and maintain the contraction of the internal anal sphincter. The somatic pudendal nerve innervates the external anal sphincter.[17] Thus, the myenteric plexus involved in the process of defecation and pelvic splanchnic nerves can be compared with *Apana Vayu*.

Pachaka Pitta involvement

Pitta, one of the three doshas, is important in digestion and metabolism. *Pachaka Pitta* is located between *Amashaya* and *Pakvashaya*. It carries out its functions with the assistance of *Samana Vayu*, *Prana Vayu*, and *Kledaka Kapha*. *Pachaka Pitta* is in charge of digestion as well as the separation of essence and wastes from food; it also supports the other *Pittas* that are located in different parts of the body.[18] Various *Srotas* secrete various *Pachaka Srava* in the *Pachak Pitta* region. The main *Sthana* of *Pachaka Pitta* is *Grahani Pradesh*, where *Anna Pachana*, also known as *Pittadhara Kala*, occurs.[19] In *Ayurvedic* science, *Grahani* is associated with the duodenum, which is where the majority of digestion takes place. Various digestive enzymes and hormones that aid in protein, carbohydrate, and fat digestion are secreted here. *Grahani* is the most important part of the digestion process because enzymes responsible for protein, fatty substance, and carbohydrate digestion are secreted here via various mechanisms by various glands. As the functions of *Pachaka Pitta* suggest, all the enzymes that are responsible for digestion like amylolytic, proteolytic and lipolytic enzymes[20] (Table 1), can be compared with *Pachaka Pitta*.

Table 1: Enzymatic secretions from the pancreas

S.No.	Type of Enzymes	Enzymes	Function
1	Proteolytic	Trypsin, chymotrypsin, Pancreatic amylase, Carboxypolypeptidase	Breakdown of proteins
2.	Amylolytic	Pancreatic amylase	Hydrolyses starches, glycogen, and other carbohydrates.
3.	Lipolytic	Pancreatic lipase, cholesterol esterase, phospholipase	Hydrolysis of fat and cholesterol esterase

Bodhak Kapha involvement

Because of its *Saumya Guna* and presence in *Jihva Mula* and *Kantha*, *Bodhak Kapha* is responsible for all types of taste sensations.[21] Secretions of the glands present in the oral cavity, according to modern theory, are responsible for taste appreciation. The main salivary glands are the parotid, submandibular, and lingual glands. Pathogenic bacteria in the mouth can easily deteriorate tissues and cause dental caries. Saliva aids in the prevention of such deteriorative processes in a variety of ways. Saliva also contains several antibacterial factors.[22] Saliva's primary function is to aid in lubrication, swallowing, taste appreciation, and speech facilitation. In summary, *Bodhak Kapha* refers to the secretions in the mouth that keep the oral cavity moist and prevent tooth decay.

Kledaka Kapha involvement

In their properties, *Kapha Dosha* is heavy, dense, cold, soft, unctuous, sweet, immobile, and slimy. This *Kapha* is in charge of softening the food and breaking down its complexity.[23] *Kledaka Kapha* is located in the *Amashaya* (stomach including the small intestine) and contributes the water principle to the remaining *Shleshma* sites and the entire body.[24] *Kledaka Kapha's* functions are comparable to those of modern medicine. *Kledaka Kapha* is the unctuous component of the gastrointestinal tract secretions that moisten, disintegrate, and break the food. Oxyntic and pyloric tubular glands are found in the stomach mucosa. They secrete a large amount of thin mucus via the mucus neck cells. Surface mucus cells secrete large amounts of viscid mucus, which coats the stomach mucosa with a gel layer of mucus that is often more than 1 mm thick, providing defence for the stomach wall as well as contributing to food transport lubrication.

Even minor contact with food or mucosal irritation stimulates the secretion of additional amounts of this thick, alkaline, and viscid mucus. Mucus differs slightly in different parts of the gastrointestinal tract, but it shares several important characteristics that make it an excellent lubricant and protectant in all locations. Thus mucus, which can allow easy slippage of food along the gastrointestinal tract and prevent excoriate or chemical damage to the epithelium can be considered as *Kledaka Kapha*.

Table 2: *Doshas* involved in digestion in the contemporary view

S.No.	Doshas	In contemporary view	Site of action	Functions
1.	Prana Vayu	Nerves involved in the oral cavity Chorda tympani, trigeminal nerve, glossopharyngeal nerve	Oral cavity and hypothalamus	Initiation of taking food, deglutition and secretion in the cephalic phase
2.	Vyana Vayu	myenteric plexus involved in peristaltic movements	GI tract from Oesophagus up to the transverse colon	The peristaltic movement of the gut
3.	Saman a Vayu	Meissner nerve plexus	Stomach, duodenum and small intestine	Initiates digestive juices
4.	Apana Vayu	pelvic splanchnic nerves and myenteric plexus involved in defecation	Distal to the transverse colon, up to the anus	Expulsion of waste materials through defecation
5.	Pachak Pitta	Digestive enzymes	Whole GI tract Specifically, duodenum	Digestion of food

6.	Bodhak Kapha	Saliva	Oral cavity	Lubrication, mastication, appreciation of taste and protection of the oral cavity
7.	Kledaka Kapha	Thin and thick mucous	Stomach and small intestine	Moistens and disintegrates the food Prevent excoriate or chemical damage to the GI epithelium

DISCUSSION –

Aahar Paka is the term used to describe the process of breaking down food into simpler compounds from more complex ones so that it may be used by the body for energy production and the ejection of undigested waste through the act of faeces. According to *Ayurveda*, the power of digestion is called *Agni*. *Sanskrit* for "fire" is "*Agni*." *Agni* is the collective name for all the elements involved in digestion, including enzymes, hydrochloric acid, etc. Let's put aside our knowledge of the contemporary digestive process and attempt to understand it entirely from an *Ayurvedic* standpoint. Therefore, please refrain from considering enzymes, metabolism, etc. for the time being. The way the ancient seers viewed human physiology compared to today's viewpoint is very different. The comparison was one of the methods they utilised to learn about and comprehend the human body. They quickly realised that just as *Vata*, *Pitta*, and *Kapha* govern the human body, so do wind, light (and heat), and water govern nature. These three were known as *Tridosha*. The health of nature can be preserved with the right amount of wind, light, and water. However, if the wind, like a storm, the sun, like an abrupt rise in temperature or a volcanic eruption, and the water, like a cyclone or a drought, go awry, nature's balance is upset. Similar to *Vata*, *Pitta*, and *Kapha*, when they are at a normal level, it promotes health, whereas when they are raised or lowered, it promotes illness.

CONCLUSION –

One of the greatest treasures that ancient India gave to humanity was *Ayurveda*. The digestive process is extremely thoroughly detailed in *Ayurveda* under *Aaharpaka*. Different *Doshas*, including *Prana Vayu*, *Vyana Vayu*, *Saman Vayu*, *Apana Vayu*, *Pachak Pitta*, *Kledaka Kapha*, and *Bodhak Kapha*, are primarily involved at various levels in the process of *Aaharpaka*. At various phases of the digestion process' physiology, these *Doshas* are quite important. Thus, it can be concluded that the Ayurvedic concept of *Aaharapaka* indicates its relevance to the contemporary physiology of digestion and metabolism, offering a vast area for research and scientific standing in the current environment.

REFERENCES –

1. Charaka, Charaka Samhita, Sutra Sthan, Triesaniya Adhyaya 11/3. English Translation of the Text with Ayurvedadipika Commentary of Chakrapanidatta, P.V. Tiwari Acharya, editor. Varanasi: Chaukhambha Vishva Bharathi; Print 2018. Page.189
2. Charaka, Charaka Samhita, Chikitsa Sthana, Grahani Chikitsa Adhyaya 15/6. English Translation of the Text with Ayurvedadipika Commentary of Chakrapanidatta, P.V. Tiwari Acharya, editor. Varanasi: Chaukhambha Vishva Bharathi; Print 2020. Page.542
3. Agnivesha, Charaka, Dridhabala, Charaka Samhita, Vimana Sthana, Strotovimana Adhyaya 5/7. Yadavaji Trikamji Acharya., editor. Varanasi: Chaukhambha Bharathi Prakashana; reprint 2015. Page.710
4. Agnivesha, Charaka, Dridhabala, Charaka Samhita, Chikitsa Sthana, Vatavyadhi Chikitsa Adhyaya 28/6. Yadavaji Trikamji Acharya., editor. Varanasi: Chaukhambha Bharathi Prakashana; reprint 2015. Page.775
5. Shastri A.D. Eds, Vrana Prashna Adhyaya, Ayurveda Tatwa Sandipika Hindi Commentary, Susruta Samhita. Revised edition. Varanasi (India): Chaukhamba Sanskrit Sansthan: 2014: 117, Reprint.Su.Ni.1/13
6. Hall. E, Guyton. C, Textbook of medical physiology, New Delhi (India), 2nd south Asia ed. Elsevier; 2018: page.466, Reprint
7. Hall. E, Guyton. C, Textbook of medical physiology, New Delhi (India), 2nd south Asia ed. Elsevier; 2018: page.432, Reprint.
8. Agnivesha, Charaka, Dridhabala, Charaka Samhita, Chikitsa Sthana, Vatavyadhi Chikitsa Adhyaya 28/9. Yadavaji Trikamji Acharya., editor. Varanasi: Chaukhambha Bharathi Prakashana; reprint 2015. Page.777
9. Susruta, Susruta Samhita Vol. I (Edited with Ayurveda Tattva Sandipika) by Kaviraj Ambika Dutta Edition Reprint 2017, Chaukhamba Sanskrit Sansthan,NidanaSthan1/17.
10. Hall. E, Guyton. C, Textbook of medical physiology, New Delhi (India), 2nd south Asia ed. Elsevier; 2018: page. 465, Reprint
11. Agnivesha, Charaka, Dridhabala, Charaka Samhita, Chikitsa Sthana, Vatavyadhi Chikitsa Adhyaya 28/8. Yadavaji Trikamji Acharya., editor. Varanasi: Chaukhambha Bharathi Prakashana; reprint 2015. Page.777
12. Gupta A.D. Eds, Astanga Sangraha Sutra Sthana 20, Revised edition. Varanasi, India: Chaukambha Krishnadas Academy; Reprint 2016
13. Susruta, Susruta Samhita Vol.II (Edited with Ayurveda Tattva Sandipika) by Kaviraj Ambika Dutta Edition Reprint 2017, Chaukhamba Sanskrit Sansthan. Uttar tantra 40/169
14. Agnivesha, Charaka, Dridhabala, Charaka Samhita, Chikitsa Sthana, Grahani Chikitsa Adhyaya 15/11. Yadavaji Trikamji Acharya., editor. Varanasi: Chaukhambha Bharathi Prakashana; reprint 2015. Page.454
15. Agnivesha, Charaka, Dridhabala, Charaka Samhita, Chikitsa Sthana, Vatavyadhi Chikitsa Adhyaya 28/10. Yadavaji Trikamji Acharya., editor. Varanasi: Chaukhambha Bharathi Prakashana; reprint 2015. Page.778
16. Agnivesha, Charaka, Dridhabala, Charaka Samhita, Chikitsa Sthana, Grahani Chikitsa Adhyaya 15/10. Yadavaji Trikamji Acharya., editor. Varanasi: Chaukhambha Bharathi Prakashana; reprint 2015. Page.454
17. Hall. E, Guyton. C, Textbook of medical physiology, New Delhi (India), 11th edition Elsevier; 2018: page.78A
18. Susruta Samhita Vol. I (Edited with Ayurveda Tattva Sandipika) by Kaviraj Ambika Dutta Edition Reprint 2017, Chaukhamba Sanskrit Sansthan, Sutra Sthan 21/10.
19. Susruta, Susruta Samhita Vol. I (Edited with Ayurveda Tattva Sandipika) by Kaviraj Ambika Dutta Edition Reprint 2017, Chaukhamba Sanskrit Sansthan, Sharira Sthan.
20. Hall. E, Guyton. C, Textbook of medical physiology, New Delhi (India), 2nd south Asia ed. Elsevier; 2018: page.435, Reprint
21. Susruta, Susruta Samhita Vol. I (Edited with Ayurveda Tattva Sandipika) by Kaviraj Ambika Dutta Edition Reprint 2017, Chaukhamba Sanskrit Sansthan, Sutra Sthan21/14.
22. Hall. E, Guyton. C, Textbook of medical physiology, New Delhi (India), 2nd south Asia ed. Elsevier; 2018: page.425, Reprint
23. Tripathy B.N. Eds, Astanga Hridaya Sutra Sthana 12/16. Revised edition. Varanasi, India: Chaukambha Sanskrit Pratisthana; 2009 Reprint
24. Susruta, Susruta Samhita Vol. I (Edited with Ayurveda Tattva Sandipika) by Kaviraj Ambika Dutta Edition Reprint 2017, Chaukhamba Sanskrit Sansthan. Sutra Sthan 21/13.