

## ROLE OF DOSHAS IN DIFFERENT AREAS OF DIGESTIVE TRACT

[Nisha Garg](#)<sup>1</sup>, [Srikanta Kumar Panda](#)<sup>2</sup>

<sup>1</sup>(MD Scholar, Department of Kriya Sharira, Ayurvedic and Unani Tibbia College and Hospital, Karol Bagh, New Delhi-05), India

<sup>2</sup>Phd [Ayurveda], Associate Professor, Department of Kriya Sharira, Ayurvedic and Unani Tibbia College and Hospital, Karol Bagh, New Delhi-05), India

Corresponding Author: [n36garg@gmail.com](mailto:n36garg@gmail.com)

<https://doi.org/10.46607/iamj08p6032022>

(Published Online: March 2022)

### Open Access

© International Ayurvedic Medical Journal, India 2022

Article Received: 30/01/2022 - Peer Reviewed: 11/02/2022 - Accepted for Publication: 12/02/2022



## ABSTRACT

The science of *Ayurveda* is based on *Tridosha* theory. The theory of *Tridosha* is unique to ayurveda. The term dosha in Sanskrit means the regulatory functional factors of the body. 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 determine the psycho-physiological constitution of an individual. Doshas have the ability to vitiate the different bodily tissues, when deviating from the state of equilibrium and can lead to diseases. The concept of *Tridosha* is a theory and any single entity or structure cannot represent a dosha. In the process of digestion, there is the involvement of different doshas at different levels which can be correlated with contemporary science through keen study. For preparing this study, the Ayurvedic classics with their available commentaries, as well as Textbooks of contemporary modern medical science have been referred to and keenly studied for a better understanding of the concept and for drawing a logical conclusion of comparison with contemporary science. In this article correlation of the physiological activity of *Tridosha* in the digestion process with modern medical science has been stated.

**Keywords:** Digestion, *Aahar paka*, *Vayu*, *Pitta*, *Kapha*

## INTRODUCTION

“Aaharyate galata adho niyat iti aaharha”, which means any substance which is taken along the throat down, can be considered as aahara. The ingested food is taken up to *Koshtha* by *Prana Vayu*. The food disintegrates because of the presence of GI (gastrointestinal) secretions, and further, it becomes soft because of the mucous substances. This action is performed by *kledaka Kapha*. The *Samana vata*, intensifies the *Pachakagni* (digestive enzymes) and properly digests the food.<sup>1</sup> Here the *Agni* (digestive fire) is meant for *Jatharagni* or *Pachakagni* or *Pachaka pitta*. Digestion is defined as the process by which food is broken down into simple substances that can be absorbed and utilized as nutrients by the body.

Functions of the digestive system include:<sup>2</sup>

1. Ingestion or consumption of food substances.
2. Breaking them into small particles
3. Transport of small particles to different areas of the digestive tract.
4. Secretion of necessary enzymes for digestion.
5. Digestion of food particles.
6. Absorption of digested products.
7. Removal of unwanted substances from the body.

### Involvement of different Doshas in different areas of digestion process:

#### Prana vayu involvement

For *Pranavaha strotas*, the origin is the *Hrudya* as well as the *Maha strotas*.<sup>3</sup> The location of *Prana* is head, thorax, trachea, tongue, mouth and nose and it performs functions of spitting, sneezing, eructation, respiration, deglutition etc.<sup>4</sup>

The *Vayu* that governs the cavity of the mouth is called the *Prana*. Its function is to force down the food.<sup>5</sup> Thus all the nervous activities involved in the deglutition process are governed by *Prana vayu*.

Swallowing consists of three stages:

1. Voluntary stage, in which food is voluntarily squeezed or rolled posterior into the pharynx
2. Pharyngeal stage, *Prana vayu* governs the impulses that are transmitted from the posterior mouth and pharynx for initiating the pharyngeal stage of swallowing through the sensory portions of the trigeminal and glossopharyngeal nerves in-

to the medulla oblongata associated with the tractus solitaries. The areas in the medulla and lower pons that control swallowing are collectively called the deglutition or swallowing centre. The motor impulses are transmitted from this centre by the 5<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> cranial nerves and a few superior cervical nerves.

3. The oesophageal stage, involves two types of peristaltic movements: primary peristalsis and secondary peristalsis.<sup>6</sup>

Despite deglutition, *Prana vayu* is also involved in hunger stimulation through the hunger centre situated in the hypothalamus and also in 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 for ex., site, smelling and hearing about any food items. The cephalic phase occurs even before food enters the stomach, it results from the sight, smell, thought or taste of food.<sup>7</sup> *Prana vayu* is also involved in governing the process of mastication which is mediated by the motor branch of the 5<sup>th</sup> cranial nerve.

#### Vyana vayu involvement

*Vyana vayu* courses through the whole organism. The site of *Vyana vayu* is said to be all over the body and is responsible for *Gati* (movements of all kinds), relaxation, contraction, twinkling etc.<sup>8</sup> In the context of digestion we can consider its site being from the oesophagus up to the transverse colon. Five kinds of muscular movements are ascribed to the action of the *Vyana vayu*.<sup>9</sup> *Dalhana* explores the five movements as relaxation (expansion), contraction (flexion), lowering down, lifting and lateral movement of any part of the body in his commentary on *Sushruta samhita*.

It can be seen as the Peristalsis movements occurring in the gut. Peristalsis is an inherent property of many syncytial smooth muscle tubes occurring in the bile ducts, glandular ducts and many other smooth muscle ducts/tubes which are involved in indigestion. The usual stimulus for intestinal peristalsis is distension of the gut. Effectual peristalsis requires an active myenteric plexus.<sup>10</sup> *Vyana vayu* governs activities of myenteric plexus that is responsible for conducting

contraction and relaxation movements in the muscles of the GI tract.

### **Samana vayu**

*Samana vayu* is located in channels of sweat, humour and water and lateral to the seat of *Agni* (digestive enzymes) and yields strength to the digestive fire.<sup>11</sup> Kindle the digestive fire, support the *Strotas*(channel) in their functions, retaining of food in the alimentary tract, digestion, separation of essence and waste and moving in the waste product downwards.<sup>12</sup>

‘*Samano agni balaprada*’, here *Agni* should be considered as *Jatharagni* which is present in the *Jatharagni Kshetra* i.e., *Grahani*. The site between *Pakvashaya* and *Aamashaya* is said to be the site of *grahani*.<sup>13</sup> when the semi-digested food leaves the stomach, the release liquid form of *Pitta* is known as *Accha pitta* occurs.<sup>14</sup> From pancreas digestive juices for the digestion of protein, carbohydrates and fat are secreted into *Grahani* i.e., very important. *Samana vayu* is involved in governing the secretion of various digestive juices. The *Samana vata*, that is having an inherent ability to strengthen the *Agni*, intensifies the digestive enzymes and play a major role in the proper digestion of food that one consumes timely and in an appropriate quantity, thus leading to 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**

*Apana* is told to be located in testicles, urinary bladder, penis, umbilicus, thighs, inguinal region and anus and play important role in the expulsion of *Samirana* (flatus), *Shakrit* (faeces), *Mutra* (urine), *Shukra* (semen), *Garbha* (fetus), *Artava* (menstrual fluid).<sup>15</sup> Responsible for absorption taking place in the colonic area. When the *pakva* part (the non-absorbable remnant part after the absorption of the nutrients), reaches the *Pakvashaya*, the drying effect of *Agni* converts it into a solid mass.<sup>16</sup>

Defecation is initiated by defecation reflexes mediated by the local enteric nervous system in the rectal wall. Two types of reflexes are seen. One is an intrinsic reflex that is mediated by local ENS in the rectal

wall. When faeces enter the rectum, there is distention of the rectal wall. Sensory signals are initiated through the myenteric plexus and cause peristalsis from descending colon to sigmoid and rectum. These waves cause the relaxation of the internal sphincter. At the same time if the external anal sphincter is open defecation occurs. The other defecation reflex is initiated by the parasympathetic nervous system. After entering faecal matter into the rectum, the nerve endings in the rectum are stimulated then signals are transmitted to the spinal cord through afferent nerve fibre. These parasympathetic signals travel in the pelvic nerve and greatly intensify peristalsis and relax the internal anal sphincter. At the same time voluntarily relaxation of the external sphincter causes defecation. Sympathetic fibres from the superior rectal and hypogastric plexuses stimulate and maintain the internal anal sphincter contraction. The external anal sphincter is innervated by the somatic pudendal nerve.<sup>17</sup>

Thus, the myenteric plexus involved in the process of defecation and pelvic splanchnic nerves can be compared with *Apana vayu*.

### **Pachaka pitta**

*Pitta*, one among three *doshas* plays a major role in digestion and metabolism. *Pachaka pitta* resides in between the *amashaya* and *Pakvashaya*. With the help of *samana vayu*, *prana vayu* and *kledaka Kapha*, it performs its functions. *Pachaka pitta* is responsible for the digestion of the food as well as also responsible for the separation of the essence and wastes from it; and also supports the other *pittas* located in different places.[18]. In the region of *pachak pitta* various srotas secrete various *pachaka srava*. The main *Sthana* of *Pachaka Pitta* is *Grahani Pradesh* where *anna pachana* occurs which is also called *Pittadhara kala*.<sup>19</sup>

In Ayurveda science, *Grahani* may be correlated with duodenum where most of the digestion occurs. Various digestive enzymes and hormones that help in the digestion of protein, carbohydrate and fat are secreted here. *Grahani* is the most important part involved in the process of digestion as enzymes responsible for digestion for proteins, fatty substances as well as car-

bohydrates are secreted here through 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<sup>20</sup> (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	Hydrolyzes starches, glycogen and other carbohydrates.
3.	Lipolytic	Pancreatic lipase, cholesterol esterase, phospholipase	Hydrolysis of fat and cholesterol esterase.

**Bodhak Kapha**

*Bodhak Kapha* is responsible for the sensation of taste of all kinds due to its *Saumya guna* and its presence in *Jihva mula* and *kantha*.<sup>21</sup> As per the modern aspect, secretions of the glands present in the oral cavity is responsible for the appreciation of taste. The principal glands of salivation are the parotid, submandibular and lingual glands. The mouth is loaded with pathogenic bacteria that can easily deteriorate tissues and can cause dental caries. Saliva helps in preventing such deteriorative processes in several ways. Saliva also contains several factors that destroy bacteria.<sup>22</sup> The primary function of saliva is to help in lubrication, swallowing, appreciation of taste and facilitation of speech. In short, it can be concluded that the secretions in the mouth which keeps the oral cavity moist and prevent the decaying of teeth is *Bodhak Kapha*.

**Kledaka Kapha**

*Kapha dosha* is heavy, dense, cold, soft, unctuous, sweet, immobile and slimy in their property. This *Kapha* is responsible for softening the food and breaking its complexity<sup>23</sup>. The location of *kledaka Kapha* is the *Amashaya* (stomach including the small intestine) and it contributes the water principle to the

remaining sites of *shleshma* and the whole body.<sup>24</sup> The functions of *kledaka Kapha* can be compared as per modern medical science. The unctuous components of the secretions of the gastrointestinal tract which moistens, disintegrates and breaks the food can be represented as *kledaka Kapha*. The stomach mucosa has oxyntic and pyloric tubular glands. They secrete large quantities of thin mucus through the mucus neck cells. The surface mucus cells secrete large quantities of viscid mucus that coats the stomach mucosa with a gel layer of mucus often more than 1 mm thick, thus providing defence for the stomach wall, as well as contributing to lubrication of food transport. Even the smallest contact with food or any irritation of the mucosa stimulates the secretion of additional amounts of this thick, alkaline and viscid mucus. Mucus is slightly different in different parts of the gastrointestinal tract, but in all locations, it has several important characteristics that make it both an excellent lubricant and a protectant. Thus mucus, which can allow easy slippage of food along the gastrointestinal tract and to prevent excoriate or chemical damage to the epithelium can be considered as *kledaka Kapha*.

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

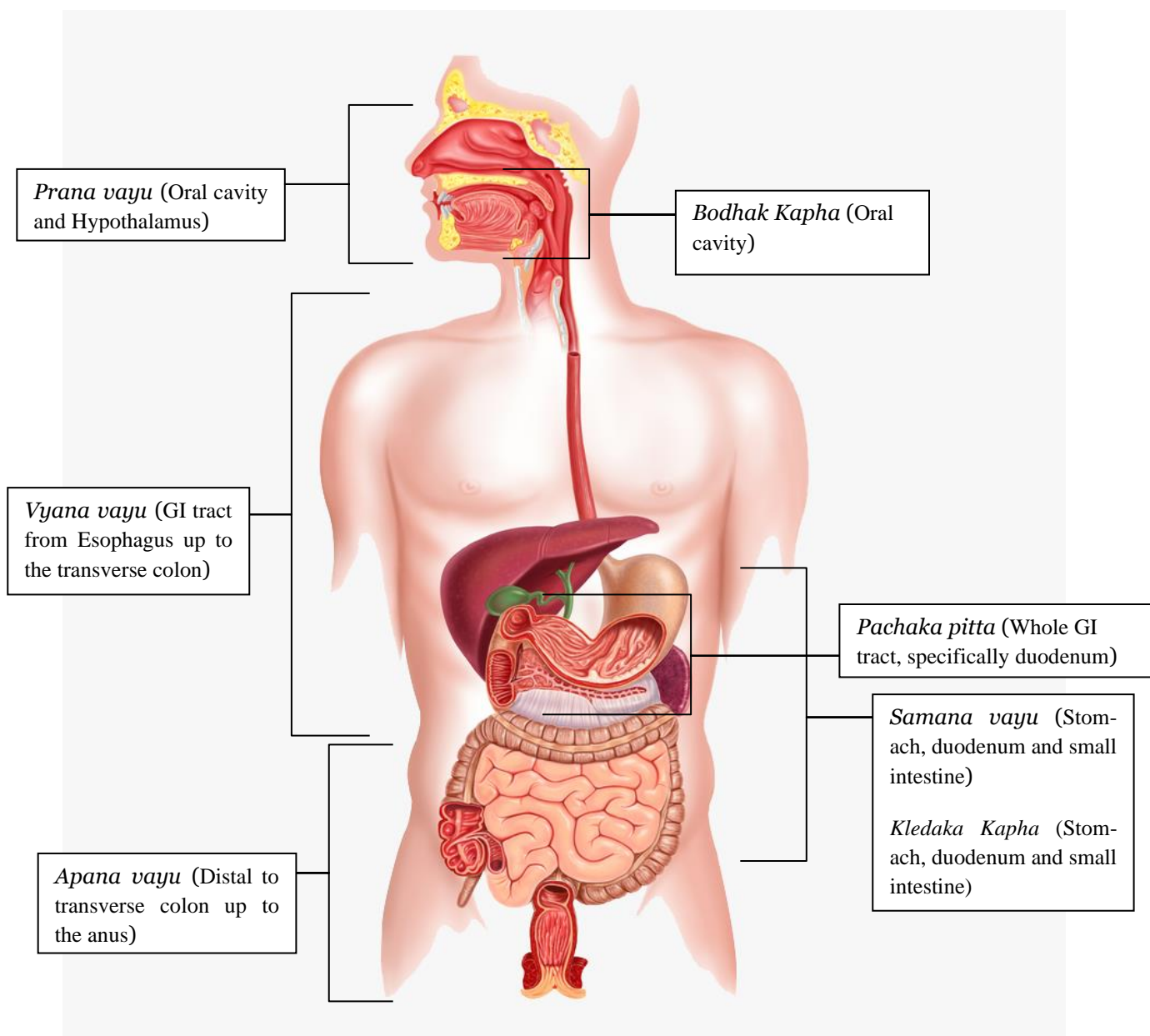
S.no.	Doshas	In contemporary view	Site of action	Functions
1.	<i>Prana vayu</i>	Nerves involved in the oral cavity Chorda tympani, trigeminal nerve, glossopharyngeal nerve	Oral cavity and hypothalamus	Initiation of taking food, deglutition and secretion in the cephalic phase
2.	<i>Vyana vayu</i>	Myenteric plexus involved in peristaltic movements	GI tract from Esophagus up to the transverse colon	The peristaltic movement of the gut
3.	<i>Samana vayu</i>	Meissner nerve plexus	Stomach, duodenum and small intestine	Initiates digestive juices
4.	<i>Apana vayu</i>	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.	<i>Paachak pitta</i>	Digestive enzymes	Whole GI tract Specifically, duodenum	Digestion of food
6.	<i>Bodhak Kapha</i>	Saliva	Oral cavity	Lubrication, mastication, appreciation of taste and protection of oral cavity
7.	<i>Kledaka Kapha</i>	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 process of digestion of food involving ingestion of food, taking it down the GI tract breaking into simpler substances from the complex substances, making it useful for utilization and expulsion of undigested waste products from the body through the defecation process. Here different doshas mainly involved which are required for the whole process to be carried out are discussed in this article. Here the emphasis has been given to correlate or compare different doshas that are involved in the digestion process with the modern point of view so that it becomes easy for students as well as for a layman to understand the importance of doshas and their functioning in contemporary view.

## CONCLUSION

*Ayurveda* is one of the great gifts of ancient India to mankind. The process of digestion is explained in *Ayurveda* under *aahar paka* very well. Different *doshas* which are mainly involved at different levels in the process of *aahar paka* are *Prana Vayu*, *Vyana Vayu*, *Saman Vayu*, *Apana Vayu*, *Pachak Pitta*, *Kledaka Kapha* and *Bodhak Kapha*. These *doshas* play a major role at different levels in the physiology of the process of digestion. Hence, it can be concluded that the concept of *Aaharapaka* in *Ayurveda* signifies its relevance with modern physiology of digestion and metabolism thus providing an extensive field of research and scientific status in the present scenario.



**FIGURE 1: FUNCTIONAL AREAS OF DIFFERENT DOSHAS IN DIGESTIVE PROCESS**

## REFERENCES

1. Agnivesha, Charaka, Dridhabala, Charaka Samhita, Chikitsa Sthana, Grahani chikitsa adhyaya. In: 15/6-7. Yadavaji Trikamji Acharya., editor. Varanasi: Chaukhambha Bharathi Prakashana; reprint 2015. Page.453.
2. Sembulingam K, Sembulingam P (revised reprint 2021) Essentials of Medical Physiology; 8<sup>th</sup> ed. Jaypee Brothers Med. Limited. page 225.
3. Agnivesha, Charaka, Dridhabala, Charaka Samhita, Vimana Sthana, Strotovimana adhyaya. In: 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. In: 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), 2<sup>nd</sup> south Asia ed. Elsevier; 2018: page.466, Reprint
7. Hall. E, Guyton. C, Textbook of medical physiology, New Delhi (India), 2<sup>nd</sup> south Asia ed. Elsevier; 2018: page.432, Reprint.
8. Agnivesha, Charaka, Dridhabala, Charaka Samhita, Chikitsa Sthana, Vatavyadhi chikitsa adhyaya. In: 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. Nidana sthan 1/17.
10. Hall. E, Guyton. C, Textbook of medical physiology, New Delhi (India), 2<sup>nd</sup> south Asia ed. Elsevier; 2018: page.465, Reprint
11. Agnivesha, Charaka, Dridhabala, Charaka Samhita, Chikitsa Sthana, Vatavyadhi chikitsa adhyaya. In: 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: Chaukhambha 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. In: 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. In: 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. In: 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), 11<sup>th</sup> edition Elsevier; 2018: page.789.
18. Susruta, 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), 2<sup>nd</sup> 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 sthan 21/14.
22. Hall. E, Guyton. C, Textbook of medical physiology, New Delhi (India), 2<sup>nd</sup> south Asia ed. Elsevier; 2018: page.425, Reprint
23. Tripathy B.N. Eds, Astanga Hridaya sutra sthana 12/16. Revised edition. Varanasi, India: Chaukhambha 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.

**Source of Support: Nil**

**Conflict of Interest: None Declared**

How to cite this URL: Nisha Garg & Srikanta Kumar Panda: Role Of Doshas In Different Areas Of Digestive Tract. International Ayurvedic Medical Journal {online} 2022 {cited March 2022} Available from: [http://www.iamj.in/posts/images/upload/3407\\_3413.pdf](http://www.iamj.in/posts/images/upload/3407_3413.pdf)