

Review Article

Volume 15 Issue 04

April 2026

CORRELATION OF AHARA PAKA WITH MODERN DIGESTIVE PHYSIOLOGY

*Dr. Nakul Raj¹, Dr. Gautam Bhaisare²

¹P.G. Scholar, Department of Kriya Sharir, Shri Dhanwantri Ayurvedic Medical College and Research Center Mathura 281401

²Guide and Associate Professor, Department of Kriya Sharir, Shri Dhanwantri Ayurvedic Medical College and Research Center Mathura 281401

*Corresponding Author - Dr. Nakul Raj, P.G. Scholar, Department of Kriya Sharir, Shri Dhanwantri Ayurvedic Medical College and Research Centre, Mathura 281401

Email id - nakul107@gmail.com

ABSTRACT

Background The concept of *Ahara Paka* occupies a central position in *Ayurveda* and describes the sequential transformation of ingested food into *Ahara Rasa*, which nourishes all *Dhatus* and sustains life. Classical texts explain this process through the coordinated actions of *Jatharagni*, *Bhutagni*, *Dhatvagni*, *Doshas*, and *Srotas*. Modern digestive physiology similarly describes digestion as a series of mechanical, chemical, enzymatic, absorptive, and metabolic events involving the gastrointestinal tract, digestive glands, enzymes, hormones, and intestinal microbiota. Although the terminologies differ, both systems recognize that efficient digestion is fundamental to nutrition, metabolism, tissue maintenance, immunity, and overall health. A comparative understanding of *Ahara Paka* and modern digestive physiology may help establish a scientific basis for interpreting classical *Ayurvedic* concepts in contemporary biomedical terms. **Aim** To critically review the concept of *Ahara Paka* and correlate it with modern digestive physiology. **Objectives** To review the classical concept of *Ahara Paka*. To understand the stages of digestion described in *Ayurveda*. To review modern digestive physiology. To establish a conceptual correlation between *Ahara Paka* and modern digestion. **Materials and Methods** This review is based on a comprehensive study of classical *Ayurvedic* texts, published review articles, physiology textbooks, and indexed scientific

literature. Relevant information was collected, critically analyzed, and correlated with current concepts of digestive physiology. **Results** Classical descriptions of *Ahara Paka* correspond closely with sequential physiological events occurring during digestion. *Avasthapaka*, *Jatharagni*, digestive secretions, absorption, metabolism, and tissue nourishment exhibit remarkable conceptual similarities despite differences in terminology. **Discussion** The physiological events described in modern medicine provide a scientific framework for understanding classical descriptions of *Ahara Paka*. Integrating both perspectives may improve interpretation of digestive physiology and metabolic disorders. **Conclusion** The principles of *Ahara Paka* remain scientifically relevant when interpreted alongside current knowledge of digestive physiology. This correlation strengthens the evidence-based understanding of *Ayurveda* while preserving its classical concepts.

Keywords: *Ahara Paka*, *Avasthapaka*, *Jatharagni*, Digestive Physiology, Digestion, *Ayurveda*

INTRODUCTION

Food is considered one of the three fundamental pillars (*Trayopastambha*) responsible for sustaining life according to *Ayurveda*. Proper digestion is regarded as the foundation of health because every tissue receives nourishment only after complete transformation of food through *Agni*. Classical texts repeatedly emphasize that even wholesome food cannot nourish the body when digestive power is impaired, whereas properly digested food promotes strength, immunity, complexion, longevity, and mental well-being.¹

The concept of *Ahara Paka* represents a systematic explanation of digestion in *Ayurveda*. It includes ingestion, mechanical breakdown, biochemical transformation, absorption, and subsequent tissue nourishment. The process is governed primarily by *Jatharagni*, supported by *Doshas*, *Bhutagni*, *Dhatvagni*, and *Srotas*. Classical scholars explained these events through the stages of *Avasthapaka* and *Nishthapaka*, demonstrating an organized understanding of digestive physiology long before modern biochemical discoveries.²

Modern digestive physiology describes digestion as a coordinated process involving mastication, gastric digestion, pancreatic enzyme secretion, bile action, intestinal digestion, absorption, transport, cellular metabolism, and waste elimination. Neural regulation, gastrointestinal hormones, intestinal microbiota, and metabolic pathways collectively ensure efficient utilization of nutrients. Although the descriptive approaches differ, both systems recognize digestion as a continuous physiological process essential for maintaining homeostasis.³

Recent scientific interest has focused on correlating traditional medical concepts with biomedical sciences. Establishing a relationship between *Ahara Paka* and modern digestive physiology facilitates better understanding of *Ayurvedic* principles among healthcare professionals and researchers. Such correlation also supports integrative approaches to nutrition, preventive medicine, and digestive health while preserving the originality of classical *Ayurvedic* philosophy.⁴

AIM

To critically review the concept of *Ahara Paka* and correlate it with modern digestive physiology.

OBJECTIVES

- To review the classical concept of *Ahara Paka*.
- To understand different stages of *Ahara Paka*.
- To review modern digestive physiology.
- To correlate *Ayurvedic* concepts with modern physiological mechanisms.
- To explore the relevance of *Ahara Paka* in maintaining health and preventing digestive disorders.

MATERIALS AND METHODS

This structured review was carried out using classical *Ayurvedic* literature including *Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Hridaya*, and authentic commentaries. Standard physiology textbooks and peer-reviewed scientific articles indexed in PubMed, Scopus, and Google Scholar were reviewed to obtain information regarding digestive physiology. The collected literature was critically evaluated and conceptually correlated to identify similarities between *Ayurvedic* principles and modern biomedical understanding of digestion.

AYURVEDIC REVIEW

Concept of *Ahara Paka*

The term *Ahara Paka* refers to the complete physiological process through which ingested food undergoes digestion, transformation, absorption, assimilation, and conversion into nutrients capable of nourishing the body tissues. In *Ayurveda*, digestion is not limited to the gastrointestinal tract but is considered a continuous metabolic process that extends from the

stomach to every cell of the body. The efficiency of *Ahara Paka* depends upon the balanced functioning of *Agni*, *Doshas*, *Srotas*, and *Dhatus*. Properly digested food forms *Ahara Rasa*, which subsequently nourishes all seven *Dhatus*, whereas improperly digested food produces *Ama*, leading to various diseases.⁵

The classical texts describe *Agni* as the fundamental biological force responsible for digestion and metabolism. Among the thirteen types of *Agni*, *Jatharagni* is considered the principal digestive fire because it initiates the digestion of all food substances. The activities of *Bhutagni* and *Dhatvagni* depend upon the proper functioning of *Jatharagni*. Therefore, maintenance of normal digestive fire is regarded as the foundation of health, longevity, strength, immunity, complexion, enthusiasm, and mental clarity.⁶

Role of *Jatharagni* in *Ahara Paka*

Jatharagni is situated mainly in the *Amashaya* and *Grahani* and is responsible for the primary digestion of food immediately after ingestion. It separates the nutritive portion (*Sara Bhaga*) from the waste portion (*Kitta Bhaga*), enabling further tissue metabolism. The intensity of *Jatharagni* determines the efficiency of digestion, nutrient availability, tissue nourishment, and elimination of waste products. Balanced *Jatharagni* promotes normal metabolism, whereas impaired *Agni* leads to incomplete digestion, formation of *Ama*, nutritional deficiencies, and systemic disorders.⁷

Stages of *Avasthapaka*

Madhura Avasthapaka

Madhura Avasthapaka represents the initial stage of digestion occurring mainly within the stomach immediately after food intake. During this stage, food becomes softened and mixed with digestive secretions. Sweet taste predominates because carbohydrates and other easily digestible nutrients begin their transformation. The lubricating action of *Kapha Dosha* protects the gastric mucosa, facilitates mastication, swallowing, and mixing of food. This phase resembles the initial mechanical digestion, salivary digestion, gastric storage, and early gastric enzymatic activity described in modern physiology.⁸

Amla Avasthapaka

Amla Avasthapaka occurs during the middle stage of digestion when food undergoes further chemical transformation under the influence of *Pitta Dosha*. Gastric acid and digestive enzymes actively participate in breaking down proteins and other complex nutrients. Food

acquires acidic characteristics, and digestive activity reaches its maximum intensity. This stage can be correlated with gastric secretion of hydrochloric acid, activation of pepsin, protein digestion, and gastric mixing described in modern physiology.⁹

Katu Avasthapaka

Katu Avasthapaka represents the final stage of gastrointestinal digestion occurring predominantly within the large intestine. Water absorption increases, intestinal contents become progressively dry, and *Vata Dosha* predominates. Separation of nutritive components from waste becomes complete, resulting in the formation of feces and gaseous products. Physiologically, this stage resembles absorption of water and electrolytes, bacterial fermentation, synthesis of certain vitamins by intestinal microbiota, and formation of feces before defecation.¹⁰

Concept of *Nishthapaka*

Following completion of *Avasthapaka*, digested food undergoes *Nishthapaka*, representing the final metabolic transformation responsible for nourishing body tissues. During this stage, *Ahara Rasa* circulates through various *Srotas* and undergoes progressive tissue-specific metabolism. Each *Dhatu* receives appropriate nutrition according to its physiological requirement, thereby maintaining structural integrity and functional efficiency. Thus, *Nishthapaka* extends beyond gastrointestinal digestion and includes systemic metabolism and tissue assimilation.¹¹

Formation of *Ahara Rasa*

Proper digestion ultimately produces *Ahara Rasa*, the primary nutritive essence derived from food. This nutrient-rich fluid circulates throughout the body and provides nourishment to every tissue. Classical *Ayurveda* considers *Ahara Rasa* the source of vitality, growth, immunity, and tissue regeneration. Continuous formation of healthy *Ahara Rasa* depends entirely upon balanced *Jatharagni*. Defective digestion produces nutritionally poor *Ahara Rasa*, leading to inadequate tissue nourishment and disease development.¹²

Role of *Bhutagni*

After primary digestion by *Jatharagni*, nutrients undergo further transformation through the action of the five *Bhutagni*, namely *Parthiva*, *Apya*, *Agneya*, *Vayavya*, and *Akashiya Agni*. Each *Bhutagni* metabolizes the corresponding *Mahabhuta* present within food, making nutrients biologically compatible with body tissues. This stage represents selective biochemical

modification before tissue utilization and ensures maintenance of elemental equilibrium within the body.¹³

Role of *Dhatvagni*

Each of the seven *Dhatus* possesses its own *Dhatvagni*, which performs tissue-specific metabolism. *Rasa Dhatvagni* converts nutrients into healthy *Rasa Dhatu*, *Rakta Dhatvagni* forms *Rakta*, and similarly each subsequent *Dhatvagni* produces the next *Dhatu*. This sequential metabolism maintains continuous tissue formation, repair, and physiological function. Proper activity of *Dhatvagni* ensures optimal tissue nourishment, whereas impaired activity results in either tissue depletion or abnormal tissue accumulation.¹⁴

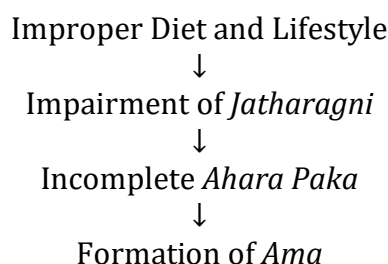
Factors Influencing *Ahara Paka*

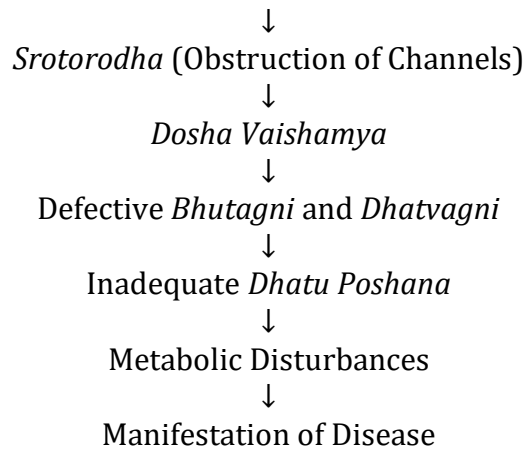
The efficiency of *Ahara Paka* depends upon numerous physiological and lifestyle factors. Balanced *Agni*, appropriate quantity and quality of food, regular meal timing, compatible dietary combinations, proper mastication, healthy mental state, adequate sleep, seasonal adaptation, age, physical activity, and balanced *Doshas* collectively promote efficient digestion. Conversely, overeating, fasting, incompatible foods, stress, anxiety, irregular meals, excessive cold food, suppression of natural urges, and sedentary lifestyle impair *Agni*, resulting in defective digestion and formation of *Ama*.¹⁵

Importance of *Ahara Paka* in Health

According to *Ayurveda*, proper *Ahara Paka* forms the basis of life because all physiological activities depend upon adequate nourishment of *Dhatus*. Efficient digestion maintains strength (*Bala*), complexion (*Varna*), enthusiasm (*Utsaha*), longevity (*Ayu*), immunity (*Ojas*), mental stability, reproductive health, and disease resistance. Any disturbance in *Ahara Paka* initiates the pathological cascade involving *Agnimandya*, *Ama*, *Srotorodha*, *Dosha Prakopa*, and tissue dysfunction. Therefore, preservation of normal digestive physiology remains the primary objective of preventive as well as therapeutic *Ayurveda*.¹⁶

Samprapti





MODERN REVIEW

Digestive Physiology

Digestion is a complex physiological process through which ingested food is mechanically and chemically broken down into absorbable molecules that can be utilized for energy production, growth, tissue repair, and maintenance of normal body functions. The digestive system consists of the gastrointestinal tract, accessory digestive glands, neural control mechanisms, gastrointestinal hormones, digestive enzymes, and intestinal microbiota. Digestion begins in the oral cavity and continues sequentially through the stomach, small intestine, large intestine, liver, pancreas, and systemic circulation. The coordinated activities of these organs ensure efficient nutrient digestion, absorption, transport, metabolism, and elimination of waste products.¹⁷

Oral Phase of Digestion

The oral cavity is the first site of digestion. Food undergoes mastication by the teeth, which increases the surface area available for enzymatic action. Saliva secreted by the salivary glands contains water, mucus, electrolytes, salivary amylase, and lingual lipase. Salivary amylase initiates the digestion of starch into maltose and dextrins, whereas mucus lubricates food and facilitates swallowing. Taste receptors stimulate reflex secretion of digestive juices and prepare the gastrointestinal tract for subsequent digestion. This phase closely resembles the initial stage of *Madhura Avasthapaka*, where food becomes softened and mixed with digestive secretions before entering the stomach.¹⁸

Gastric Phase of Digestion

After swallowing, food enters the stomach, where it is stored temporarily and mixed with gastric secretions. Gastric glands secrete hydrochloric acid, pepsinogen, gastric lipase,

intrinsic factor, mucus, and bicarbonate. Hydrochloric acid activates pepsinogen into pepsin and provides the acidic environment necessary for protein digestion. Gastric peristaltic movements convert food into semi-liquid chyme. Controlled emptying of chyme into the duodenum ensures efficient digestion and absorption. Physiologically, this phase corresponds to *Amla Avasthapaka*, where *Pitta*-dominant digestion transforms food into a chemically digestible form.¹⁹

Small Intestinal Digestion

The small intestine is the principal site for digestion and nutrient absorption. Chyme entering the duodenum mixes with bile secreted by the liver and digestive enzymes released from the pancreas. Pancreatic amylase digests carbohydrates, trypsin and chymotrypsin digest proteins, while pancreatic lipase digests fats. Brush border enzymes such as maltase, lactase, sucrase, and peptidases complete digestion into monosaccharides, amino acids, fatty acids, and glycerol. Intestinal villi and microvilli greatly increase the absorptive surface area, allowing efficient transfer of nutrients into blood and lymphatic circulation.²⁰

Role of the Liver and Gallbladder

The liver performs numerous metabolic functions essential for digestion. It produces bile, which emulsifies dietary fats and enhances the action of pancreatic lipase. The liver also stores glycogen, synthesizes plasma proteins, detoxifies harmful substances, metabolizes nutrients, and regulates lipid metabolism. The gallbladder concentrates and stores bile until it is required during digestion. These metabolic activities resemble the post-digestive transformation explained through *Bhutagni*, where nutrients undergo further modification before becoming suitable for tissue utilization.²¹

Pancreatic Functions

The pancreas possesses both exocrine and endocrine functions. The exocrine pancreas secretes digestive enzymes and bicarbonate-rich fluid into the duodenum. Bicarbonate neutralizes gastric acid, thereby creating an optimal pH for pancreatic enzyme activity. Endocrine secretions, including insulin and glucagon, regulate glucose metabolism and maintain metabolic homeostasis. The pancreas therefore plays a central role in digestion, absorption, and nutrient metabolism.²²

Absorption of Nutrients Absorption is the physiological process through which digested nutrients cross the intestinal epithelium and enter systemic circulation. Monosaccharides

and amino acids are absorbed directly into the portal circulation, whereas fatty acids and monoglycerides are absorbed into lymphatic vessels as chylomicrons. Vitamins, minerals, electrolytes, and water are absorbed through specialized transport mechanisms. Efficient absorption ensures that nutrients become available for cellular metabolism and tissue repair. This phase correlates well with the formation and circulation of *Ahara Rasa* described in *Ayurveda*.²³

Large Intestine and Gut Microbiota

The large intestine primarily absorbs water and electrolytes while converting undigested food into feces. Resident intestinal microbiota ferment indigestible carbohydrates, produce short-chain fatty acids, synthesize vitamin K and certain B vitamins, and contribute to immune regulation. Colonic motility, microbial metabolism, and fecal formation complete the digestive process before defecation. This physiological stage shows conceptual similarity with *Katu Avasthapaka*, where water absorption, waste formation, and *Vata* predominance are described.²⁴

Hormonal Regulation of Digestion

Digestive activity is precisely regulated by gastrointestinal hormones including gastrin, secretin, cholecystokinin, gastric inhibitory peptide, motilin, and ghrelin. These hormones coordinate gastric acid secretion, pancreatic enzyme release, bile secretion, intestinal motility, appetite regulation, and gastric emptying. Together with autonomic nervous control, they maintain optimal digestive efficiency. Such integrated regulation resembles the coordinated action of *Agni*, *Doshas*, and *Srotas* described in *Ayurveda*.²⁵

Correlation of *Ahara Paka* with Modern Digestive Physiology

The classical concept of *Ahara Paka* demonstrates remarkable similarity with the sequential physiological events described in modern digestive science. *Madhura Avasthapaka* corresponds to mastication, salivary digestion, and early gastric processing. *Amla Avasthapaka* resembles gastric acid secretion, enzymatic digestion, and protein breakdown within the stomach. *Katu Avasthapaka* correlates with intestinal absorption, microbial fermentation, water absorption, and fecal formation in the large intestine. *Jatharagni* may be interpreted as the collective digestive capacity produced by gastric acid, digestive enzymes, bile, pancreatic secretions, intestinal enzymes, and metabolic activity. Similarly, *Bhutagni* represents biochemical transformation of nutrients before systemic utilization, whereas *Dhatvagni* resembles intracellular metabolism responsible for tissue-specific synthesis,

energy production, growth, and repair. Thus, although the terminologies differ, both systems explain digestion as a continuous physiological process extending from food intake to cellular metabolism.²⁶

Comparative Correlation of *Ayurvedic* and Modern Concepts

<i>Ayurvedic</i> Concept	Modern Physiological Correlation
<i>Madhura Avasthapaka</i>	Oral digestion and early gastric digestion
<i>Amla Avasthapaka</i>	Gastric acid secretion and protein digestion
<i>Katu Avasthapaka</i>	Intestinal absorption, water absorption, fecal formation
<i>Jatharagni</i>	Combined digestive enzymes and gastric metabolic activity
<i>Bhutagni</i>	Biochemical transformation of absorbed nutrients
<i>Dhatvagni</i>	Cellular metabolism and tissue-specific anabolic processes
<i>Ahara Rasa</i>	Absorbed nutrients transported through blood and lymph
<i>Sara Bhaga</i>	Absorbable nutrients
<i>Kitta Bhaga</i>	Feces and metabolic waste products
<i>Ama</i>	Undigested metabolites, impaired digestion, metabolic toxins

PATHOGENESIS



RESULTS AND FINDINGS

- Classical descriptions of *Ahara Paka* closely parallel the sequential stages of modern digestion.
- *Madhura Avasthapaka* corresponds to oral and early gastric digestion.
- *Amla Avasthapaka* resembles gastric acid-mediated chemical digestion.
- *Katu Avasthapaka* correlates with intestinal absorption, microbial activity, and fecal formation.
- *Jatharagni* represents the integrated digestive and metabolic capacity of the gastrointestinal system.
- *Bhutagni* may be interpreted as biochemical transformation of nutrients before tissue utilization.
- *Dhatvagni* closely resembles tissue-level cellular metabolism.
- *Ahara Rasa* corresponds to absorbed nutrients transported through blood and lymph.
- Both systems emphasize that efficient digestion is essential for tissue nourishment, immunity, and maintenance of health.
- Impaired digestion results in metabolic disturbances that predispose individuals to chronic diseases.

DISCUSSION

The present review demonstrates that the classical concept of *Ahara Paka* described in *Ayurveda* closely resembles the sequential physiological events involved in modern digestion. Although the terminology differs, both sciences recognize digestion as a continuous process beginning with food intake and ending with tissue nourishment and waste elimination. *Jatharagni* represents the principal digestive force responsible for initiating digestion, while digestive enzymes, gastric acid, bile, pancreatic secretions, intestinal enzymes, and gastrointestinal hormones collectively perform similar functions in modern physiology. The three stages of *Avasthapaka* show remarkable conceptual similarity with oral, gastric, intestinal, and colonic phases of digestion.²⁷

The review also highlights that the concept of *Bhutagni* and *Dhatvagni* extends beyond gastrointestinal digestion and includes biochemical transformation, cellular metabolism, and tissue-specific utilization of nutrients. Modern physiology explains these events

through hepatic metabolism, intracellular enzymatic reactions, anabolic and catabolic pathways, mitochondrial energy production, protein synthesis, lipid metabolism, and carbohydrate utilization. Likewise, the formation of *Ahara Rasa* may be correlated with absorbed nutrients transported through the blood and lymphatic circulation to various tissues. The classical description of *Sara Bhaga* and *Kitta Bhaga* also corresponds well with nutrient absorption and waste formation described in present-day physiology.²⁸

Another important observation is that both systems emphasize the consequences of impaired digestion. According to *Ayurveda*, defective *Ahara Paka* results in *Agnimandya*, formation of *Ama*, *Srotorodha*, *Dosha Vaishamya*, and subsequent disease manifestation. Similarly, modern medicine recognizes that impaired digestion, altered gut microbiota, malabsorption, chronic inflammation, oxidative stress, and metabolic dysfunction contribute significantly to gastrointestinal as well as systemic diseases. Therefore, integrating the classical principles of *Ahara Paka* with current scientific knowledge may improve the understanding of digestive physiology and encourage evidence-based application of *Ayurveda* in preventive and integrative healthcare.²⁹

CONCLUSION

Ahara Paka is one of the fundamental physiological concepts of *Ayurveda*, explaining the complete transformation of food into nutrients capable of sustaining life. The review indicates a close conceptual relationship between *Avasthapaka*, *Jatharagni*, *Bhutagni*, *Dhatvagni*, and the various stages of modern digestion, absorption, metabolism, and tissue nutrition. Despite differences in terminology and explanatory models, both systems emphasize that efficient digestion is the basis of health, tissue nourishment, immunity, and longevity. Scientific correlation of these concepts enhances the understanding of classical *Ayurvedic* physiology and supports future interdisciplinary research integrating traditional knowledge with modern biomedical sciences.

CONFLICT OF INTEREST -Nil.

SOURCE OF SUPPORT- None.

REFERENCES

1. Charaka. *Charaka Samhita. Sutra Sthana* 11/35. Agnivesha, revised by Dridhabala. Commentary by Chakrapani Datta. Varanasi: Chaukhambha Surbharati Prakashan; 2022.

2. Charaka. *Charaka Samhita. Chikitsa Sthana* 15. Commentary by Chakrapani Datta. Varanasi: Chaukhambha Surbharati Prakashan; 2022.
3. Vagbhata. *Ashtanga Hridaya. Sutra Sthana* 8. Commentary by Arunadatta. Varanasi: Chaukhambha Orientalia; 2021.
4. Sushruta. *Sushruta Samhita. Sutra Sthana* 46. Commentary by Dalhana. Varanasi: Chaukhambha Sanskrit Sansthan; 2022.
5. Charaka. *Charaka Samhita. Grahani Chikitsa*. Varanasi: Chaukhambha Surbharati Prakashan; 2022.
6. Sharma PV. *Charaka Samhita*. English Translation. Vol. II. Varanasi: Chaukhambha Orientalia; 2019.
7. Sharma RK, Dash B. *Charaka Samhita*. Vol. II. Varanasi: Chaukhambha Sanskrit Series Office; 2020.
8. Vagbhata. *Ashtanga Hridaya. Sharira Sthana*. Varanasi: Chaukhambha Orientalia; 2021.
9. Guyton AC, Hall JE. *Textbook of Medical Physiology*. 15th ed. Philadelphia: Elsevier; 2024.
10. Barrett KE, Barman SM, Brooks HL, Yuan JXJ. *Ganong's Review of Medical Physiology*. 27th ed. New York: McGraw-Hill; 2023.
11. Boron WF, Boulpaep EL. *Medical Physiology*. 4th ed. Philadelphia: Elsevier; 2022.
12. Tortora GJ, Derrickson B. *Principles of Anatomy and Physiology*. 16th ed. Hoboken: Wiley; 2023.
13. Hall JE. Gastrointestinal physiology and digestion. In: *Guyton and Hall Textbook of Medical Physiology*. 15th ed. Philadelphia: Elsevier; 2024.
14. Kumar V, Abbas AK, Aster JC. *Robbins and Cotran Pathologic Basis of Disease*. 11th ed. Philadelphia: Elsevier; 2023.
15. Guyton AC, Hall JE. Digestion, absorption and metabolism. In: *Textbook of Medical Physiology*. 15th ed. Philadelphia: Elsevier; 2024.
16. Tripathi B. *Ashtanga Hridayam*. Varanasi: Chaukhambha Sanskrit Pratishthan; 2021.

17. Charaka. *Charaka Samhita. Vimana Sthana* 2. Varanasi: Chaukhambha Surbharati Prakashan; 2022.
18. Sushruta. *Sushruta Samhita. Sharira Sthana*. Varanasi: Chaukhambha Sanskrit Sansthan; 2022.
19. Sharma PV. *Dravyaguna Vijnana*. Vol. I. Varanasi: Chaukhambha Bharati Academy; 2021.
20. Davidson S. *Davidson's Principles and Practice of Medicine*. 25th ed. Edinburgh: Elsevier; 2023.
21. Harrison TR. *Harrison's Principles of Internal Medicine*. 22nd ed. New York: McGraw-Hill; 2024.
22. Guyton AC, Hall JE. Metabolism and nutrition. In: *Textbook of Medical Physiology*. 15th ed. Philadelphia: Elsevier; 2024.
23. Barrett KE. Gastrointestinal function. In: *Ganong's Review of Medical Physiology*. 27th ed. New York: McGraw-Hill; 2023.
24. Boron WF. Nutrient absorption and transport. In: *Medical Physiology*. 4th ed. Philadelphia: Elsevier; 2022.
25. Charaka. *Charaka Samhita. Sutra Sthana* 28. Varanasi: Chaukhambha Surbharati Prakashan; 2022.
26. Vagbhata. *Ashtanga Hridaya. Sutra Sthana* 12. Varanasi: Chaukhambha Orientalia; 2021.
27. Guyton AC, Hall JE. Regulation of gastrointestinal functions. In: *Textbook of Medical Physiology*. 15th ed. Philadelphia: Elsevier; 2024.
28. Sharma RK, Dash B. *Charaka Samhita*. Critical exposition. Vol. III. Varanasi: Chaukhambha Sanskrit Series Office; 2020.
29. Acharya YT. *Sushruta Samhita with Nibandha Sangraha* commentary. Varanasi: Chaukhambha Sanskrit Sansthan; 2022.