

Review Article

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A CRITICAL REVIEW OF AHARA PARINAMAKARA BHAVA WITH SPECIAL REFERENCE TO DIGESTIVE PHYSIOLOGY

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ABSTRACT

Background Digestion is a complex physiological process involving mechanical breakdown of food, gastrointestinal motility, digestive secretions, enzymatic hydrolysis, absorption and assimilation of nutrients. *Ayurveda* explains this process through the concept of *Agni* and six supporting factors known as *Ahara Parinamakara Bhava*, namely *Ushma*, *Vayu*, *Kleda*, *Sneha*, *Kala* and *Samayoga*. These factors act together to transform ingested food into a form suitable for absorption and tissue nourishment. Their functions may be understood in relation to digestive enzymes, gastrointestinal movements, aqueous secretions, lubrication, transit time and neurohormonal coordination described in modern physiology **Aim:** To review *Ahara Parinamakara Bhava* with special reference to digestive physiology. **Objectives:** To explain the six *Ahara Parinamakara Bhava*. To correlate their functions with modern digestive mechanisms. To assess their role in normal digestion and digestive disorders. **Materials and Methods** A narrative review was conducted using classical Ayurvedic texts, standard commentaries and published Ayurvedic literature. Modern physiology textbooks and scientific literature related to gastrointestinal motility, digestive secretions, enzymatic

digestion, absorption and neural regulation were reviewed. Classical and modern concepts were compared through functional interpretation. **Results** *Ushma* represents biochemical digestion and transformation, while *Vayu* represents movement, mixing and propulsion of food. *Kleda* provides moisture, *Sneha* provides lubrication and softness, *Kala* allows adequate time for digestion, and *Samayoga* ensures proper coordination among all digestive factors. Disturbance in any one factor may impair the entire digestive process. **Discussion** The six *Ahara Parinamakara Bhava* should not be interpreted as isolated anatomical structures. They represent broad physiological functions required for proper digestion, absorption and nourishment. **Conclusion** The concept of *Ahara Parinamakara Bhava* presents digestion as a coordinated mechanical, chemical, temporal and regulatory process. It remains useful for understanding individual digestive capacity and the multifactorial origin of gastrointestinal disorders.

Keywords: *Ahara Parinamakara Bhava*, *Agni*, *Ushma*, *Vayu*, digestion, gastrointestinal physiology.

INTRODUCTION

Food is the basic source of energy, growth, repair and maintenance of the human body. However, the nutritive value of food becomes useful only after proper digestion, absorption and assimilation. *Ayurveda* gives great importance to *Ahara* because properly selected and properly digested food supports health, strength, complexion, immunity and longevity. The effect of food does not depend only upon its quantity and quality but also upon the functional state of *Agni* and the internal factors responsible for its transformation.¹

The term *Ahara Parinamakara Bhava* is formed from three words. *Ahara* means ingested food, *Parinama* means transformation and *Bhava* means the factors responsible for producing that transformation. *Charaka Samhita* describes six important factors involved in the digestion of food, namely *Ushma*, *Vayu*, *Kleda*, *Sneha*, *Kala* and *Samayoga*. These factors perform different but closely related functions such as digestion, separation, moistening, softening, time-dependent processing and coordination.²

Modern digestive physiology also considers digestion to be a coordinated process. Food is mechanically broken down by mastication, mixed with digestive secretions, moved through the gastrointestinal tract and exposed to acids, enzymes and bile. The digested nutrients are

absorbed through the intestinal mucosa and transported through blood or lymph. Gastrointestinal motility, secretion and absorption are controlled by the enteric nervous system, autonomic nerves and gastrointestinal hormones. Any disturbance in this coordination may lead to indigestion, bloating, altered bowel movements, maldigestion or malabsorption.³

The concept of *Ahara Parinamakara Bhava* therefore provides a useful framework for understanding digestion as a multidimensional process. It includes chemical transformation, mechanical movement, hydration, lubrication, sufficient processing time and functional coordination. A critical review is required because direct one-to-one comparison of classical terms with modern organs or enzymes may be misleading. Each factor should be interpreted as a broad physiological function rather than a single anatomical structure.⁴

AIM AND OBJECTIVES

Aim: To review *Ahara Parinamakara Bhava* with special reference to digestive physiology.

Objectives:

1. To explain the six *Ahara Parinamakara Bhava*.
2. To correlate their functions with modern digestive mechanisms.
3. To assess their role in normal digestion and digestive disorders.

MATERIALS AND METHODS

This narrative review was based on the descriptions available in *Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Hridaya* and their standard commentaries. Relevant Ayurvedic books and published review articles dealing with *Agni*, *Ahara Parinama*, *Grahani* and digestion were also consulted. Modern information was collected from standard physiology textbooks and scientific literature related to gastrointestinal motility, digestive secretions, enzymatic digestion, nutrient absorption, neural regulation and gastrointestinal hormones. The classical and modern concepts were compared on the basis of functional similarity.

CONCEPTUAL STUDY: AYURVEDIC REVIEW

Concept of *Ahara Parinama*

According to *Ayurveda*, consumed food passes through several stages of transformation before it becomes suitable for tissue nourishment. This transformation begins in the

gastrointestinal tract through the action of *Jatharagni* and continues at the elemental and tissue levels through *Bhutagni* and *Dhatvagni*. Proper digestion produces wholesome *Ahara Rasa*, which circulates throughout the body and nourishes the different *Dhatu*. Incomplete or improper digestion produces poorly processed material associated with *Ama*. Thus, *Ahara Parinama* includes digestion, separation of useful and waste portions, absorption, transport and metabolic utilisation of nutrients.⁵

Role of Agni in Digestion

Agni is the principal factor responsible for digestion and metabolic transformation. *Jatharagni* acts directly upon consumed food in the gastrointestinal tract, while the six *Ahara Parinamakara Bhava* provide the necessary conditions for its action. Heat alone cannot complete cooking without water, movement, softness, sufficient time and proper combination of ingredients. Similarly, *Agni* requires the coordinated support of all six factors for complete digestion. When these factors function normally, food is divided into *Sara* and *Kitta*. When they are disturbed, digestion becomes incomplete and tissue nourishment is affected.⁶

Ushma

Ushma performs *Pachana*, meaning digestion, cooking and transformation. It represents the active transforming power that changes the original properties of food and converts complex food substances into simpler forms. Functionally, *Ushma* may be related to gastric acid, digestive enzymes, pancreatic secretions, brush-border enzymes and metabolic reactions. However, it should not be equated only with physical temperature or hydrochloric acid. It represents the total biochemical capacity responsible for breaking down and transforming food. Deficiency of *Ushma* may lead to slow digestion, heaviness and formation of *Ama*, while excessive *Ushma* may cause rapid digestion, burning sensation and irritation.⁷

Vayu

Vayu is responsible for movement, separation, mixing and propulsion of food. It supports swallowing, movement of food through the oesophagus, retention and mixing in the stomach, movement through the intestine and elimination of waste. Among the functional divisions of *Vata*, *Prana Vata* assists ingestion, *Samana Vata* regulates digestion and separation, and *Apana Vata* supports elimination. *Samana Vata* acts near *Agni* and helps in the proper movement and distribution of digestive material. Therefore, *Vayu* may be correlated with

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gastrointestinal motility, peristalsis, segmentation and neural regulation rather than simply with intestinal gas.⁸

Kleda

Kleda performs moistening and loosening of food. Dry and compact food cannot be properly mixed or digested without sufficient fluid. Saliva initiates moistening in the oral cavity, while gastric juice, pancreatic juice, bile and intestinal secretions continue the process. *Kledaka Kapha* helps to moisten food and protects the stomach. Proper *Kleda* facilitates softening, mixing and exposure of food particles to digestive enzymes. Deficient *Kleda* may produce dryness, hard stools and difficult digestion, whereas excessive *Kleda* may produce heaviness, excessive fluidity and weakened digestive action.⁹

Sneha

Sneha performs *Mardava*, meaning softness and smoothness. It reduces friction, helps soften food and supports the smooth movement of gastrointestinal contents. It also contributes to the protection of the gastrointestinal mucosa. Functionally, *Sneha* may be related to mucus, phospholipids, dietary lipids and other lubricating substances present within the gastrointestinal tract. It also assists in the digestion and absorption of fats. Deficiency of *Sneha* may cause dryness, irritation and constipation, while excessive *Sneha* may produce heaviness, delayed digestion and excessive unctuousness.¹⁰

Kala

Kala represents the time required for proper digestion and transformation. Each stage of digestion requires an appropriate duration. Food must remain in the stomach long enough for mixing and gastric digestion, but excessive retention may lead to stagnation and discomfort. Similarly, the intestinal contents require sufficient contact time for enzymatic digestion and absorption. *Kala* also includes the timing of meals, interval between meals, age, season and daily biological rhythm. Eating before the previous meal is digested may disturb *Agni*, while an excessively long interval may cause weakness or irregular digestive activity.¹¹

Samayoga

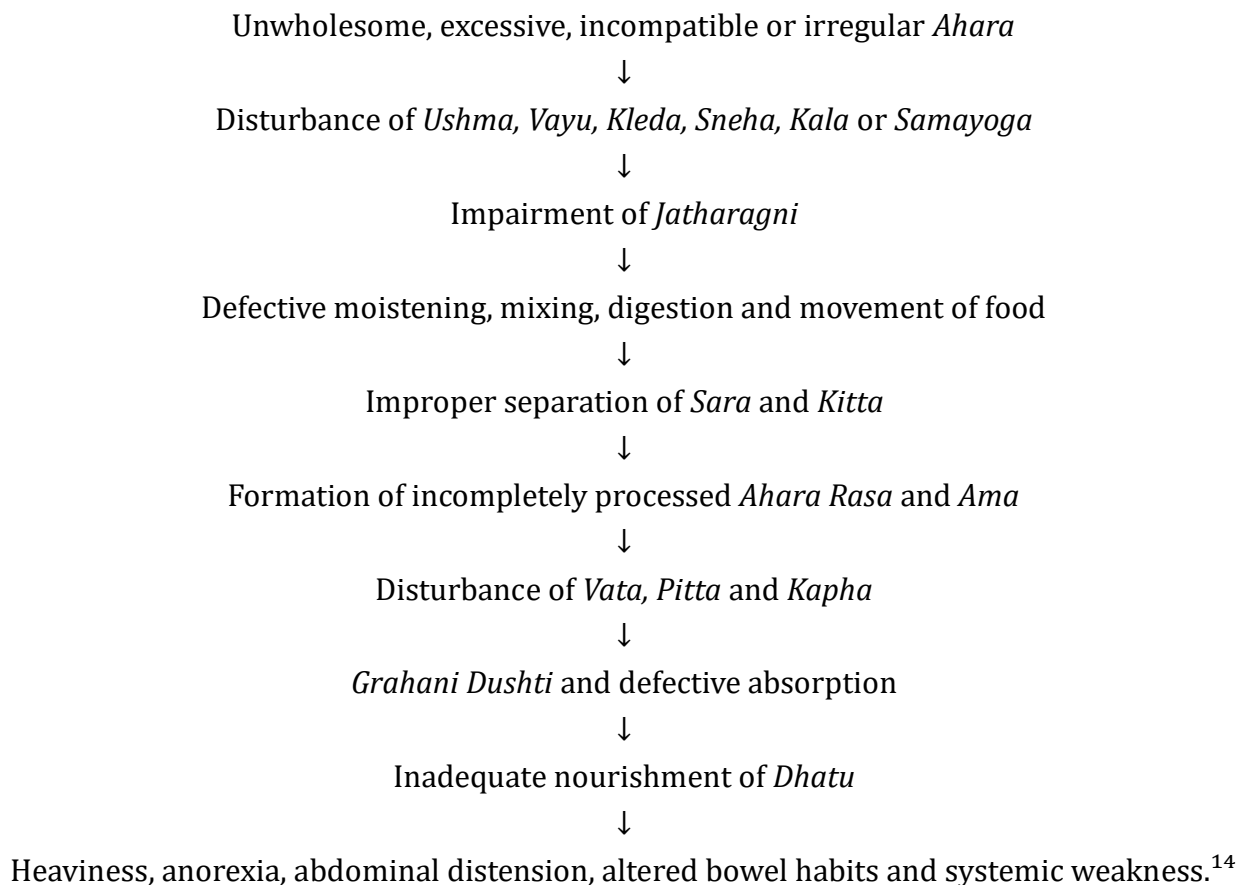
Samayoga means appropriate combination and coordination of all digestive factors. It does not represent a separate secretion or organ. Digestion requires the correct relationship

among food, enzymes, acids, bile, water, mucus, motility and time. Gastric secretions must act when food is present, pancreatic enzymes must enter the intestine at the correct stage, bile must mix with dietary fat and intestinal movements must provide proper mixing and transit. Thus, *Samayoga* may be understood as integrated physiological coordination among mechanical, chemical, neural, hormonal and temporal components of digestion.¹²

Combined Function of the Six Factors

The six factors act together and cannot be separated completely. *Vayu* moves and mixes food, allowing *Ushma* to act effectively. *Kleda* provides a moist medium, while *Sneha* provides softness and lubrication. *Kala* ensures sufficient time for transformation, and *Samayoga* coordinates the sequence. A disturbance in one factor can influence the others. For example, normal enzyme secretion cannot complete digestion when intestinal transit is extremely rapid, and normal motility cannot compensate for severe enzyme deficiency. The concept therefore recognises the interdependence of all digestive functions.¹³

PROBABLE *SAMPRAPTI* OF DISTURBED *AHARA PARINAMAKARA BHAVA*



MODERN REVIEW

Digestive Physiology

Digestion begins in the oral cavity with mastication, salivary secretion and formation of a food bolus. Swallowing moves the bolus through the oesophagus into the stomach. The stomach stores food, mixes it with acid and enzymes and converts it into chyme. The chyme then enters the small intestine, where pancreatic enzymes, bile and intestinal enzymes complete the digestion of carbohydrates, proteins and fats. Most nutrients are absorbed in the small intestine, while water and electrolytes are further absorbed in the colon.¹⁵

Mechanical Digestion and Gastrointestinal Motility

Mechanical digestion increases the surface area of food and improves its exposure to digestive enzymes. Mastication reduces particle size, while gastric contractions mix food with gastric secretions. In the small intestine, segmentation promotes mixing and peristalsis moves the contents forward. These movements are produced by smooth muscle and regulated by the enteric nervous system, autonomic nerves and interstitial cells of Cajal. These functions are closely related to *Vayu*, particularly its roles in movement, mixing and separation.¹⁶

Digestive Secretions and Luminal Environment

Saliva contains water, mucus and enzymes that lubricate food and begin digestion. Gastric glands secrete hydrochloric acid, pepsinogen, mucus and intrinsic factor. The pancreas secretes digestive enzymes and bicarbonate, while the liver and gallbladder supply bile. The intestinal glands add fluid and mucus, which support digestion and protect the mucosa. The aqueous component of these secretions is comparable to *Kleda*, while mucus-mediated protection and lubrication are related to *Sneha*. Their chemical digestive action is related to *Ushma*.¹⁷

Enzymatic Digestion of Nutrients

Carbohydrates are broken down into monosaccharides through salivary amylase, pancreatic amylase and brush-border enzymes. Proteins are denatured by gastric acid and hydrolysed by pepsin, pancreatic proteases and intestinal peptidases. Fats are emulsified by bile salts and digested mainly by pancreatic lipase. These chemical reactions represent the transforming function of *Ushma*. However, their activity also depends upon adequate moisture, proper pH,

mixing, transit time and coordination among secretions, showing that all six factors act together.¹⁸

Neural and Hormonal Regulation

The gastrointestinal tract is regulated by the enteric nervous system and by parasympathetic and sympathetic pathways. Gastrin stimulates gastric acid secretion, secretin promotes pancreatic bicarbonate secretion and cholecystokinin stimulates pancreatic enzyme release and gallbladder contraction. These hormones are released according to the composition and location of food. Such coordinated responses ensure that digestive secretions, motility and absorption occur at the appropriate time. This integrated control closely resembles the function of *Samayoga*.¹⁹

Role of Transit Time

Gastrointestinal transit time has an important influence on digestion and absorption. Gastric emptying depends upon meal size, particle size, fat content, acidity and caloric density. Rapid gastric emptying may deliver inadequately processed food into the intestine, while delayed emptying may cause fullness, nausea and discomfort. Rapid intestinal transit may reduce absorption and produce diarrhoea, whereas slow colonic transit may cause constipation. These observations support the importance of *Kala* in complete digestive transformation.²⁰

Absorption and Assimilation

The small intestine is the main site of nutrient absorption because of its large surface area, villi and microvilli. Monosaccharides and amino acids enter the portal blood, while most lipids are transported through lymph in the form of chylomicrons. Vitamins, minerals, water and electrolytes are absorbed through specialised mechanisms. Proper absorption requires complete digestion, normal mucosal function, adequate circulation and suitable transit time. The formation of nutritionally useful absorbed material may be compared functionally with properly formed *Ahara Rasa*.²¹

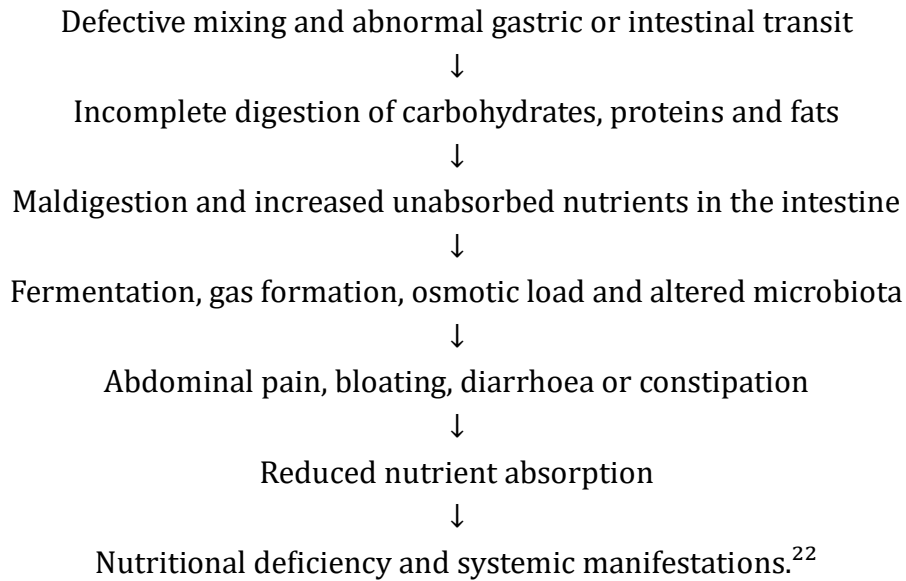
PATHOGENESIS OF DIGESTIVE DYSFUNCTION

Dietary error, stress, infection, inflammation or autonomic disturbance



Altered motility, secretion, enzyme activity or luminal pH





RESULTS AND FINDINGS

- *Ahara Parinamakara Bhava* represents six functional requirements for complete digestion.
- *Ushma* is primarily related to biochemical and enzymatic transformation of food.
- *Vayu* represents gastrointestinal motility, mixing, propulsion and neural regulation.
- *Kleda* provides the aqueous medium required for softening, mixing and enzyme activity.
- *Sneha* contributes to lubrication, mucosal protection, softness and lipid digestion.
- *Kala* ensures appropriate meal timing, gastric emptying, intestinal transit and adequate contact time.
- *Samayoga* represents the coordination of food, digestive secretions, enzymes, hormones, nerves, motility and time.
- The six factors act in an interdependent manner and dysfunction of one factor may affect the others.
- Proper *Ahara Parinama* is essential for the formation of wholesome *Ahara Rasa* and nourishment of *Dhatu*.
- The concept provides a useful functional model for understanding digestive disorders, but direct anatomical equivalence should be avoided.²³

DISCUSSION

The concept of *Ahara Parinamakara Bhava* indicates that digestion is not dependent on *Agni* alone. It requires several supporting functions that act together. Strong digestive enzymes may remain ineffective if food is not properly mixed or hydrated. Similarly, normal motility may not produce complete digestion when enzyme secretion is deficient. The classical model therefore recognises digestion as an integrated system involving transformation, movement, fluidity, lubrication, timing and coordination. This understanding is compatible with modern physiology, which describes digestion as a combined result of muscular, secretory, enzymatic, neural and hormonal activities.²⁴

The comparison between Ayurvedic and modern concepts should remain functional rather than literal. *Ushma* cannot be considered only hydrochloric acid, because it includes all chemical and metabolic transformations. *Vayu* is broader than peristalsis because it also includes regulation and separation. *Kleda* includes several digestive fluids, while *Sneha* includes lubrication, softness and mucosal protection. *Kala* influences each stage of digestion, and *Samayoga* ensures their proper coordination. One modern physiological process may therefore relate to more than one classical factor.²⁵

Clinically, the concept encourages assessment of digestive capacity in addition to the type of food consumed. Symptoms such as heaviness, bloating, early satiety, dryness, constipation or loose stools may result from different combinations of impaired *Ushma*, *Vayu*, *Kleda*, *Sneha*, *Kala* and *Samayoga*. The framework may help in understanding *Agnimandya*, *Ajirna*, *Grahani Dushti* and *Ama*. However, further research is required using measurable variables such as gastric emptying time, intestinal transit, pancreatic enzyme activity, mucosal secretion, nutrient absorption and validated gastrointestinal symptom scores.²⁶

CONCLUSION

Ahara Parinamakara Bhava presents digestion as the coordinated action of *Ushma*, *Vayu*, *Kleda*, *Sneha*, *Kala* and *Samayoga*. These factors broadly represent biochemical transformation, gastrointestinal movement, digestive fluids, lubrication, adequate processing time and physiological coordination. The concept provides a comprehensive explanation of normal digestion and the multifactorial origin of digestive dysfunction. Its greatest value lies

in functional interpretation rather than direct comparison with individual organs, enzymes or hormones.

CONFLICT OF INTEREST- Nil.

SOURCE OF SUPPORT- None.

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