Role of Impaired Digestion in Disease Pathogenesis: According to Unani System of Medicine

Journal- Research & Review: Journal of Unani Siddha and Homeopathy
ISSN- 2394-1960, Volume- 13, Issue 2, Year 2026.
Article Received date: 12/05/2026
Article Accepted date 15/06/2026

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Abstract
The relationship between digestion and disease occupies a central position in Greco-Arab (Unani) medicine, as emphasized by classical physicians such as Ibn Sina and Al-Razi. In Unani medicine, digestion (Haḍm) is not confined to the gastrointestinal tract alone but represents a comprehensive physiological and metabolic process involving four sequential stages: gastric digestion (Haḍm-e-Mi'dī), hepatic digestion (Haḍm-e-Kabidī), vascular digestion (Haḍm-e-'Urūqī), and tissue digestion (Haḍm-e-'Uḍwī). These stages are governed by Quwwat-e-Hāḍima (digestive faculty) and driven by Ḥarārat-e-Gharīziyya (innate heat), which collectively ensure the formation of healthy humours (Akhlāṭ) necessary for nutrition, growth, and maintenance of bodily equilibrium. According to classical Unani literature, impairment at any stage of digestion results in defective transformation of food, leading to the formation of abnormal chyme, deranged humours, and excessive waste products (Fuḍlāt). When these wastes are not adequately eliminated due to weakness of the expulsive faculty (Quwwat-e-Dāfi'a), they accumulate as morbid matter (Mādda), which plays a pivotal role in disease causation. Poor digestion is therefore regarded as a fundamental etiological factor underlying both simple temperamental disorders (Sū'-i-Mizāj) and matter-associated diseases (Sū'-i-Mizāj Māddī). Classical physicians further described how defective digestion may contribute to systemic disturbances involving the nervous, cardiovascular, hepatic, and integumentary systems. Several factors contribute to digestive impairment, including weakness of innate heat, unsuitable dietary habits, sedentary lifestyle, excessive moisture-producing foods, and derangement of temperament (Mizāj). A vicious cycle develops in which accumulated morbid matter further weakens digestive faculties and innate heat, thereby aggravating disease progression.
This review highlights the central importance of maintaining digestive integrity through appropriate dietary regulation, lifestyle modification, preservation of innate heat, and strengthening of digestive faculties. The Greco-Arab perspective presents a holistic framework of health that conceptually parallels modern preventive and metabolic medicine, emphasizing digestion as a cornerstone of disease prevention and maintenance of health.

Keywords: Unani Medicine; Greco-Arab Medicine; Haḍm; Ḥarārat-e-Gharīziyya; Morbid Matter; Akhlāṭ; Disease Pathogenesis

Introduction

Digestion is a fundamental physiological process essential for nourishment, growth, and survival. In Greco-Arab (Unani) medicine, the concept of digestion (Haḍm) extends beyond the mere mechanical and chemical breakdown of food and encompasses a comprehensive process of transformation through which food is converted into nutritive substances suitable for the maintenance of life. Classical Unani scholars such as Hippocrates, Galen, Ibn Sina, and Ismail Jurjani emphasized that proper digestion is the foundation of health, whereas impaired digestion forms the basis of disease development[1,2].

According to Unani physiology, digestion is governed by Quwwat-e-Hāḍima (digestive faculty), Quwwat-e-Jādhiba (absorptive faculty), Quwwat-e-Māsika (retentive faculty), and Quwwat-e-Dāfi‘a (expulsive faculty), all functioning under the influence of Ḥarārat-e-Gharīziyya (innate heat). The digestive process occurs in four sequential stages known collectively as Huḍūm-e-Arba‘a: gastric digestion (Haḍm-e-Mi‘dī), hepatic digestion (Haḍm-e-Kabidī), vascular digestion (Haḍm-e-‘Urūqī), and tissue digestion (Haḍm-e-‘Uḍwī). These stages ensure the transformation of food into healthy humours (Akhlāṭ-e-Arba‘a), namely Dam (blood), Balgham (phlegm), Ṣafrā (yellow bile), and Sawdā (black bile), which are responsible for nourishment and maintenance of tissues[3,4].

Classical physicians maintained that weakness of digestive faculties or impairment of innate heat leads to incomplete digestion and production of abnormal humours and waste materials. Such waste products accumulate within the body as morbid matter (Mādda), causing obstruction, temperamental imbalance, and ultimately disease. Thus, poor digestion is regarded in Unani medicine as one of the principal causes of both localized and systemic disorders[5,6]

Modern gastrointestinal physiology explains digestion through coordinated mechanical, enzymatic, hormonal, neural, and microbial mechanisms. Although the theoretical foundations differ, both modern physiology and Unani medicine recognize digestion as a multistage process essential for nutrient assimilation, metabolic balance, and health maintenance. Therefore, comparative understanding of these systems may provide broader insight into the relationship between digestion and disease[7,8]

This review aims to explore the concept of digestion in Unani medicine, examine the causes and consequences of impaired digestion, and analyze its role in disease pathogenesis in the light of classical Greco-Arab literature and contemporary physiological understanding.

Concept of Digestion (Haḍm) in Unani Medicine

In Unani medicine, digestion (Haḍm) is regarded as a continuous transformative process through which food undergoes gradual refinement until it becomes part of the body tissues. This process is governed by Quwwat-e-Ṭabī‘iyya (natural faculty) and driven by Ḥarārat-e-Gharīziyya (innate heat). Classical Unani scholars described digestion as a form of “Nuḍj” (concoction or maturation), wherein food is progressively transformed into humours and ultimately into tissues[5,9,10]

The digestive process is divided into four major stages collectively known as Huḍūm-e-Arba‘a:

1. **Haḍm-e-Mi‘dī (Gastric Digestion)**
2. **Haḍm-e-Kabidī (Hepatic Digestion)**
3. **Haḍm-e-‘Urūqī (Vascular Digestion)**
4. **Haḍm-e-‘Uḍwī (Tissue Digestion)**

Each stage represents a distinct phase of transformation and nourishment.[1,5]

Haḍm-e-Mi‘dī (Gastric Digestion)

Gastric digestion includes oral, gastric, intestinal, and mesenteric phases. Digestion begins in the mouth, where mastication and salivary secretions initiate softening and qualitative

alteration of food. Within the stomach, food is acted upon by gastric secretions and peristaltic movements (Ḥarkat-e-Dūdiyya), resulting in the formation of semi-digested material known as Kaylūs (chyle).
In the intestine, nutrient absorption and bile-mediated digestive functions occur. According to classical scholars, bile facilitates digestion, stimulates intestinal motility, and assists absorption. The digested material is then transported through mesenteric vessels for further refinement[4,11,12]

Haḍm-e-Kabidī (Hepatic Digestion)
The liver (Kabid) is considered the principal organ responsible for the conversion of absorbed nutrients into humours (Akhlāṭ). Under the influence of innate heat, the nutritive material undergoes further "cooking" and refinement, leading to the formation of Dam, Balgham, Ṣafrā, and Sawdā. Among these, Dam is regarded as the primary nutritive humour responsible for sustaining life and tissue nourishment.[1,3,5]

Haḍm-e-'Urūqī (Vascular Digestion)
Vascular digestion refers to the transformations occurring within circulating blood inside arteries and veins. During circulation, humours undergo subtle refinement and become adapted to the requirements of specific organs and tissues.[1,3,5]

Haḍm-e-'Uḍwī (Tissue Digestion)
Tissue digestion represents the final stage of nourishment, where tissues selectively assimilate nutritive substances according to their temperament (Mizāj). The assimilated material becomes part of the tissue structure and contributes to growth, repair, and maintenance.[1,3,5]

Modern Perspective of Digestion
Modern physiology defines digestion as the mechanical and chemical breakdown of food into absorbable nutrients. The digestive system includes the gastrointestinal tract and accessory organs such as salivary glands, pancreas, liver, and gallbladder.
The digestive process occurs in several coordinated phases:

- **Ingestion:** Intake of food and initiation of mastication and salivary digestion
- **Propulsion:** Movement of food through the gastrointestinal tract via peristalsis
- **Digestion:** Mechanical and enzymatic breakdown of food
- **Absorption:** Uptake of nutrients through intestinal mucosa
- **Defecation:** Elimination of undigested waste

Modern digestion is regulated through enzymatic, neural, hormonal, and microbial mechanisms involving gastric acid, pancreatic enzymes, bile secretions, enteric nervous system activity, and gastrointestinal hormones such as gastrin, secretin, and cholecystokinin (Table 1). [7,8,13-16]

Table 1: Comparative Analysis of Unani and Modern Concepts of Digestion

Aspect	Unani Concept	Modern Physiology
Driving force	Ḥarārat-e-Gharīziyya (Innate Heat)	Metabolic and enzymatic energy
Governing mechanism	Quwwat-e-Hāḍima and Ṭabī'at	Nervous and endocrine regulation
Stages	Gastric → Hepatic → Vascular → Tissue	Oral → Gastric → Intestinal → Absorption

Product of digestion	Akhlāṭ (Humours)	Nutrients and metabolites
Final objective	Tissue nourishment and balance	Cellular metabolism and homeostasis

Although their terminologies differ, both systems recognize digestion as a staged, regulated, and transformative process essential for health maintenance.[17-20]

Concept of Disease in Unani Medicine

Disease (Maraḍ) in Unani medicine is defined as a deviation from the normal state of the body resulting in impairment of function. Classical Unani scholars classified diseases into:

- **Sū'-i-Mizāj** (temperamental imbalance)
- **Sū'-i-Tarkīb** (structural abnormality)
- **Tafarruq-i-Ittiṣāl** (loss of continuity)

Disease may arise either due to simple temperamental derangement or due to accumulation of morbid matter (Mādda). Defective digestion is regarded as one of the major sources of such morbid matter.[1-6,21,22]

Causes of Poor Digestion

Several factors contribute to impairment of digestion in Unani medicine:

- Weakness of Ḥarārat-e-Gharīziyya
- Derangement of temperament (Sū'-i-Mizāj) of digestive organs
- Improper dietary habits and overeating
- Excessive intake of cold and moisture-producing foods
- Sedentary lifestyle and lack of physical activity
- Improper sleep and psychological stress
- Incompatibility between diet, age, season, and occupation

These factors weaken digestive faculties and impair the transformation of food into healthy humours.[1,3-5, 23,24]

Relationship Between Poor Digestion and Disease Pathogenesis

Impaired Gastric Digestion

Defective gastric digestion results in abnormal chyme formation. Classical scholars described that such improperly digested material produces harmful vapours that ascend toward the brain and disturb neurological and psychological functions. It also leads to formation of poor-quality humours unsuitable for tissue nourishment.[1,3,12]

Impaired Hepatic Digestion

When hepatic digestion becomes defective, abnormal humours are produced. Since tissues derive nourishment from these humours, their quality directly affects organ temperament and function. Abnormal humour formation may therefore predispose to systemic disorders.[3-6]

Impaired Vascular Digestion

Defective vascular digestion interferes with proper refinement and distribution of humours. Accumulation of abnormal humours within vessels may contribute to obstruction, circulatory disturbances, and systemic disease manifestations.[10-13]

Impaired Tissue Digestion

Failure of tissue digestion results in defective assimilation of nutrients within organs. Classical Unani texts associate this with degenerative disorders, weakness, and certain dermatological conditions.[5,6,12]

Role of Morbid Matter (Mādda) in Disease Development

According to Unani medicine, weak digestive power and diminished innate heat produce excessive waste materials (Fuḍlāt). When the expulsive faculty becomes weak, these wastes accumulate within the body and transform into morbid matter (Mādda).
Morbid matter may:

- Obstruct vessels and channels
- Alter tissue temperament
- Interfere with organ function
- Produce localized or systemic disease

The body attempts to eliminate these materials through natural routes or divert them toward less vital organs such as the skin. Failure of elimination leads to Sū'-i-Mizāj Māddī (matter-associated diseases). Accumulated morbid matter further weakens innate heat and digestive faculties, establishing a vicious cycle of disease progression.

Preventive and Therapeutic Measures to Improve Digestion
Classical Greco-Arab medicine strongly emphasizes preservation of digestive health through lifestyle and dietary regulation. Recommended measures include:

- Avoidance of overeating
- Maintaining appropriate meal intervals
- Diet according to temperament, age, and season
- Moderate physical activity
- Adequate sleep and rest
- Avoidance of emotional stress and excessive mental exertion
- Use of easily digestible and temperamentally suitable foods

These measures strengthen digestive faculties, preserve innate heat, and prevent accumulation of morbid matter.[1-3,12]

Methodology
This study is a narrative review based on classical Greco-Arab (Unani) medical literature and relevant secondary sources. Data were collected from authoritative classical texts of renowned scholars including Ibn Sina, Al-Razi, and Ismail Jurjani. Primary references included *Al-Qānūn fi'l-Ṭibb*, *Kitāb al-Ḥāwī*, *Zakhīra Khwārazm Shāhī*, *Kāmil al-Ṣanā'a*, and *Kitāb al-Kulliyāt* etc.
Relevant information related to digestion (Haḍm), innate heat (Ḥarārat-e-Gharīziyya), humour formation, and disease causation was identified, translated where necessary, and thematically organized. Secondary references and publications from organizations such as the Central Council for Research in Unani Medicine (CCRUM) were also consulted to ensure consistency and authenticity of interpretation.
The collected material was synthesized qualitatively to analyze the role of impaired digestion in disease pathogenesis within the Greco-Arab framework. No statistical analysis was performed, as the study is descriptive and interpretative in nature.

Discussion
The concept of digestion occupies a central place in Greco-Arab medicine, where it is viewed as both a digestive and metabolic phenomenon essential for sustaining life. Classical Unani scholars considered healthy digestion indispensable for the formation of balanced humours and maintenance of physiological equilibrium. Disturbance at any stage of digestion results in defective humour formation, accumulation of waste products, and generation of morbid matter, which ultimately contribute to disease development.
The Unani concept of digestion demonstrates notable conceptual parallels with modern physiology. While modern science explains digestion through biochemical, enzymatic, and

hormonal mechanisms, Unani medicine emphasizes qualitative transformation governed by innate heat and natural faculties. Despite differences in terminology and theoretical orientation, both systems acknowledge that digestion is a regulated multistage process essential for nutrition, metabolism, and homeostasis.

A significant contribution of the Unani framework is its emphasis on individualized health through concepts such as Mizāj (temperament), Quwwat (faculties), and Ḥarārat-e-Gharīziyya. This holistic perspective recognizes the interaction between diet, lifestyle, environment, and physiological capacity in determining digestive efficiency and disease susceptibility.

The relationship between impaired digestion and disease pathogenesis described in classical literature also reflects modern understanding of metabolic dysfunction, toxin accumulation, inflammatory processes, and systemic effects of gastrointestinal disturbances. Thus, the Unani concept of poor digestion as a root cause of disease remains clinically and philosophically relevant.

Conclusion

Digestion is regarded in Unani medicine as a continuous and integrated physiological process extending from ingestion to tissue assimilation. The four-stage model of digestion—gastric, hepatic, vascular, and tissue digestion—provides a comprehensive framework linking digestion, metabolism, nourishment, and disease development.

Impaired digestion results in the production of abnormal humours and accumulation of morbid matter, which play a central role in the pathogenesis of various diseases. Weakness of innate heat, unsuitable diet, sedentary lifestyle, and temperamental imbalance are important contributing factors to digestive dysfunction.

Although Unani and modern medicine explain digestion through different paradigms, both recognize it as a staged and regulated process essential for maintaining health. Comparative analysis demonstrates substantial conceptual continuity between classical Unani principles and contemporary physiological understanding.

The Unani perspective offers a holistic and preventive approach emphasizing preservation of digestive health through dietary regulation, lifestyle modification, and maintenance of innate heat. Such integrative understanding may contribute meaningfully to contemporary approaches in preventive and lifestyle medicine.

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