Int J Ayurvedic Med,Vol 17 (1), 2026; 32-37

Ayurveda Sahiti Prabha's

International Journal of Ayurvedic Medicine

ISSN No: 0976-5921

Review Article

Agni (Digestive Factor) and Gut Microbiota: Bridging Ancient Ayurvedic Knowledge with Contemporary Science

Vineeta Singh[1], Mangalagowri V Rao[2*]

1. Ph.D Scholar, Department of Swasthavritta and Yoga, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi – 221005. Orcid Id: 0000-0003-4885-856X
2. Associate Professor, Department of Swasthavritta and Yoga, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi – 221005. Orcid Id: 0000-0002-3549-3576

Received: 24-07-2025 Accepted: 01-03-2026 Published: 31-03-2026

Abstract

Background: *Agni* is essential factor residing inside the human body, responsible for health and disease. Agni is important for dietary recommendations, lifestyle-related advice, and the choice of therapeutic interventions. It transforms the food into energy, helps in immunity and overall well-being. In context with Agni, contemporary science explains about the gut microbiota, a complex ecosystem of microorganisms essential for digestion, nutrient- assimilation, and immune modulation. Objective: To explores the conceptual and functional relationship between Agni and gut microbiota. Methods: A comprehensive review of Ayurvedic texts was conducted. Parallelly, a systematic literature search was performed across databases such as PubMed, Scopus, Web of Science, and DHARA using keywords such as "*Agni*," "digestive fire," "gut microbiota," "gut-brain axis," "dysbiosis," and "metabolic disease." Result: *Agni* is considered as the *Mula* of health and longevity. A state of *Sama Agni* (balanced digestive-fire) facilitates efficient metabolism, disease resistance, and psychological well-being. In contrast, *Mandagni* corresponds to reduced microbial diversity, diminished short-chain fatty acid synthesis, gut-brain axis signalling, and heightened disease susceptibility. In parallel, contemporary research consistently affirms the role of gut microbiota in maintaining metabolic equilibrium, with dysbiosis implicated in chronic disorders such as obesity, type 2 diabetes, IBS, and autoimmune pathologies. Conclusion: *Agni* and the gut microbiota reflect a shared importance on balancing homeostasis as the cornerstone of health. By synthesizing ancient metabolic wisdom with contemporary microbiome research, an integrative model can be developed for the prevention and management of digestive and metabolic disorders.

Keywords: Dysbiosis, Gut health, Gut-brain axis, *Jatharagni,* Holistic health, Microbiome.

Access this article online

Website: https://ijam.co.in

DOI: https://doi.org/10.47552/ijam.v17i1.6388

Introduction

Ayurveda, the traditional healthcare system originating from India, regards *Agni* as a fundamental determinant of an individual's health. The primary role of *Agni* is to digest and metabolize various food components and facilitate tissue nourishment. By converting food into energy, *Agni* supports all vital physiological functions. Consequently, *Acharya Charaka* emphasizes that *Dehagni* (*Jatharagni*) serves as the foundation of life, complexion, strength, health, nourishment, luster, *Oja* (vital essence), *Teja* (energy), and *Prana* (life force) (1)**.** *Acharya Charaka* also emphasizes the critical role of *Agni*, stating that the cessation of its function results in death, whereas a balanced (*Sama*) *Agni* ensures optimal health, longevity, and well-being. Conversely, any vitiation of *Agni* disrupts the body's metabolic processes, leading to impaired health and the onset of diseases. Thus, *Agni* is regarded as the foundation (*Mula*) of life (2).

In Ayurvedic physiology, *Agni* is not merely limited to the physical process of digestion but encompasses the entire spectrum of metabolic transformations occurring within the human body, from the cellular to the systemic level. Recent advances in microbiome research have revolutionized our understanding of the gut ecosystem and its profound influence on human health. The gut microbiota, comprising trillions of microorganisms, plays crucial roles in digestion, metabolism, immune function, and even neurological health. These discoveries have led to a paradigm shift in how we can ascertain digestive health and its systemic implications, bearing striking parallels to the holistic Ayurvedic perspective of Agni's role in maintaining overall wellness. The relationship between *Agni* and the gut microbiota presents a unique opportunity to bridge traditional knowledge with

*** Corresponding Author:**
Mangalagowri V Rao
Associate Professor, Department of Swasthavritta and Yoga,
Faculty of Ayurveda, Institute of Medical Sciences,
Banaras Hindu University, Varanasi – 221005
Email Id: mangowri@gmail.com

contemporary scientific understanding. While Ayurveda describes various states of *Agni* (*Sama, Vishama, Tikshna,* and *Manda*) affecting different aspects of health, modern research has revealed how alterations in the gut microbiome composition and function can similarly impact multiple physiological systems.

This convergence suggests that ancient Ayurvedic practitioners may have been observing and treating manifestations of gut dysbiosis through their understanding of *Agni*. The integration of Ayurvedic wisdom regarding *Agni* with contemporary microbiome science could provide valuable insights for developing preventive strategies and therapeutic interventions that address the root causes of digestive and metabolic disturbances.

Objective: To propose a conceptual framework that links *Agni* with gut microbiota, integrating Ayurvedic principles with modern microbiological methodologies.

Materials and Methods

A systematic review was conducted using classical Ayurvedic texts, including the *Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Hridaya*, *Bhavaprakasha*, *Yogaratnakara*, and Ayurvedic dictionaries. Additionally, a structured search was performed across major electronic databases such as PubMed, Scopus, Web of Science, AYUSH Research Portal, DHARA, and Google Scholar. The search strategy utilized Boolean operators to refine the results, focusing on the relationship between *Agni*, gut microbiota, dysbiosis, and metabolic diseases. The search terms applied *Agni* OR "digestive fire" OR "metabolic fire," "*Agni* AND gut microbiota," "*Agni* AND microbiome," "*Agni* AND gut brain axis," "gut microbiota" OR "microbiome," "dysbiosis," and "*Agni* AND metabolic disease."

Results

The Concept of *Agni* in Ayurveda

Acharya Charaka identifies *Agni* as a fundamental *Karana Dravya* (causative factor) of the universe and the key force behind all bodily transformations. According to *Marichi, Agni* residing in *Pitta* regulates physiological functions, ensuring well-being when balanced and leading to adverse effects when impaired (3). *Acharya Sushruta* states that *Pitta* itself is *Agni*, and no other form of *Agni* exists in the body. This is due to the *Tikshna* (sharp) and *Ushna* (hot) properties of *Agni* inherent in *Pitta*, enabling functions like *Dahana* (burning) and *Pachana* (digestion) (Su. Su. 21/9).

Agni is responsible for digestion, metabolism, and transformation within the body. It also helps in the assimilation of nutrients and the maintenance of overall health. *Agni* is classified into thirteen types, with *Jatharagni*, the digestive fire located in the stomach and intestines which is the being the most significant. This *Jatharagni* influences other metabolic factors, such as *Bhutagni* and *Dhatvagni*, which are responsible for transforming the five elements (*Panchamahabhuta*) and metabolizing tissues (*Dhatus*), respectively (4). The state of *Agni* is closely linked to health, as balanced *Agni* ensures proper digestion and nutrient absorption, whereas impaired *Agni* leads to the formation of *Ama*, a toxic substance that contributes to various diseases.

There are four states of *Agni* i.e. *Samagni* (balanced), *Tikshna Agni* (hyperactive, linked to Pitta dosha), *Mandagni* (diminished, associated with Kapha dosha), and *Vishama Agni* (irregular, related to Vata dosha). Maintaining balanced *Agni* is essential for sustaining health, as it facilitates the proper breakdown and assimilation of food, thereby supporting tissue nourishment, immune function, and psychological clarity. Ayurvedic practices such as dietary regulation, herbal remedies, and lifestyle modifications aim to harmonize *Agni* according to an individual's constitution (*Prakriti*) and seasonal variations (*Ritucharya*). Disruptions in *Agni* are considered the root cause of most diseases, as impaired digestion and metabolism lead to the accumulation of *Ama*, which obstructs bodily channels (*Srotas*) and impairs physiological functions.

Gut Microbiota: A Modern Perspective

The human gastrointestinal (GI) tract contains around 100 trillion microorganisms, which is roughly ten times the number of somatic cells in the body. These colonies of microorganisms that maintain a symbiotic relationship with their host. The term "microbiota" refers to a collection of microorganisms, including bacteria, archaea, and certain unicellular eukaryotes, residing in specific environments such as the stomach, mouth, and skin (5). Microorganisms in the gastrointestinal (GI) tract vary in composition, quantity, and function, with the highest concentration located in the large intestine. They play a key role in fermenting undigested food components, especially carbohydrates and fiber, and contribute to fecal bulk. The most common bacterial genera in the adult gut include *Bifidobacterium*, *Lactobacillus*, *Bacteroides*, *Clostridium*, *Escherichia*, *Streptococcus*, and *Ruminococcus*, with approximately 60% classified under the phyla *Bacteroidetes* or *Firmicutes (6)*. The gut microbiota plays a vital role in metabolizing dietary components that human enzymes cannot digest, such as complex polysaccharides. These are fermented into short-chain fatty acids (SCFAs), including acetate, propionate, and butyrate, which provide energy for colonocytes, support immune regulation, and help maintain the intestinal barrier (7). Additionally, the gut microbiota synthesizes essential vitamins like vitamin K and certain B vitamins, crucial for metabolic functions. Beyond its metabolic roles, the gut microbiota is essential for developing and regulating the immune system (8). It facilitates immune cell maturation, balances pro-inflammatory and anti-inflammatory responses, and protects against pathogens through competitive exclusion and antimicrobial production (9). Moreover, the gut microbiota interacts with the central nervous system via the gut-brain axis, influencing brain function and behavior (10).

Gut-Brain Axis and *Agni (11)*

The gut-brain axis (GBA) represents a bidirectional communication network between the central nervous system (CNS), the enteric nervous system (ENS), and the gut microbiota, playing a crucial role in digestion, immunity, and mental health. Ayurveda describes a direct relationship between digestion and mental health via *Manovaha Srotas* (mind-body channel), similar to the gut-brain axis.

Mapping Agni Categories to Microbiota Diversity and Functional Profiles

1. *Tikshnagni* (Intense state of digestive, metabolic factors) – *Tikshnagni* is characterized by excessively rapid digestion, resulting in incomplete nutrient assimilation and a predisposition to conditions such as hyperacidity and inflammation. The microbiota profile associated with *Tikshna Agni* typically exhibits reduced microbial diversity due to inflammation or imbalances caused by heightened metabolic activity. There is often an enrichment of pro-inflammatory microbial species, such as *Proteobacteria*, accompanied by a decline in populations of short-chain fatty acid (SCFA)-producing bacteria like *Faecalibacterium*

prausnitzii and *Roseburia*, which play a vital role in maintaining gut health and mucosal integrity.

2. *Mandagni* (Depressed or weak state of digestive, metabolic factors) - *Mandagni* is characterized in Ayurveda by slow and inefficient digestion due to the dominant influence of kapha, often accompanied by sensations of heaviness, lethargy, and the accumulation of *Ama* (toxins). The associated microbiota profile typically shows reduced microbial diversity, often skewed toward dysbiosis. There is an increased prevalence of opportunistic pathogens and fermentative bacteria, contributing to excessive gas and toxin production. Additionally, beneficial species involved in efficient carbohydrate and protein metabolism are reduced, and short-chain fatty acid (SCFA) production may be diminished, potentially impairing gut-brain and gut-immune signalling.

3. *Vishamagni* (Irregular state of digestive, metabolic factors) - *Vishamagni*, or an irregular digestive factor, refers to erratic digestion that fluctuates between hyperactivity and sluggishness, typically associated with bloating, gas, and irregular bowel movements, primarily influenced by the dominance of *Vata*. From a microbiota perspective, this condition is associated with fluctuations in microbial diversity, reflecting unstable gut conditions. Stress-sensitive microbial species tend to dominate, suggesting disruptions in the gut-brain axis. Additionally, there is an increased prevalence of methane-producing bacteria, particularly *Methanobrevibacter smithii*, which is linked to irregular intestinal motility. Short-chain fatty acid (SCFA) levels exhibit episodic alterations, indicating inconsistent fermentation patterns within the gut.

4. *Samagni* (Normal state of digestive, metabolic factors) -

Samagni, representing the normal state of digestive and metabolic factors in Ayurveda, is characterized by optimal and balanced digestion, ensuring efficient nutrient absorption and proper waste elimination. From a microbiota perspective, this state is associated with high microbial diversity, reflecting a resilient and healthy gut ecosystem. Beneficial microbes such as *Bacteroidetes*, *Firmicutes*, and short-chain fatty acid (SCFA) producers like *Faecalibacterium*, *Akkermansia*, and *Bifidobacterium* are abundant. Microbial metabolic pathways remain balanced, supporting anti-inflammatory and immune-modulatory functions. Additionally, SCFA production is stable, contributing to the maintenance of a healthy gut lining and promoting systemic metabolic regulation.

Interconnections Between Prakriti, Agni, and Gut Microbiota (12), (13)

Table 1: Showing the interconnections between *Prakriti* (body constitution), *Agni* (digestive fire), and gut microbiota

***Prakriti* (Body Constitution)**	**Agni (Digestive /Metabolic Factors)**	**Gut Microbiota**	**Functional Implications**
Vata	***Vishama Agni*** (Irregular digestive fire)	Reduced microbial diversity, dominance of methane-producing bacteria *(Methanobrevibacter smithii)*	Irregular bowel movements, bloating, and gas due to unstable gut conditions
Pitta	*Tikshnagni* (Intense state of digestive, metabolic factors)	Higher abundance of pro-inflammatory microbes, lower SCFA producers	Rapid digestion, increased acidity, inflammation, and gut sensitivity
Kapha	*Mandagni* (Depressed or weak state of digestive, metabolic factors)	Lower microbial diversity, dominance of *Firmicutes,* reduced SCFA production	Slow digestion, heaviness, constipation, and metabolic sluggishness

Interconnections Between *Srotas, Vyadhi* (Diseases), and Gut Microbiota (14)

Table 2: Showing the interconnections between *Srotas*, *Vyadhi* (diseases), and gut microbiota

***Srotas* (Functional Channels)**	**Related *Vyadhi* (Diseases)**	**Gut Microbiota**
Pranavaha Srotas (Channel of breath)	*Hikka* (Hiccough), *Shwasa Roga* (Bronchial Asthma), *Kasa Roga* (Cough), *Rajayakshma* (Tuberculosis), *Hridroga* (heart disease)	Bacteroides spp., Firmicutes, Proteobacteria
Udakavaha Srotas (Channel of water)	*Jiwha Taalu shosha* (Dryness of tongue and palate), *Pipasa* (excessive thirst)	Lactobacillus, Bifidobacterium, Helicobacter pylori aggravate the thirstcondition
Annavaha Srotas (Channel of food)	*Aruchi* (Anorexia), *Agnimandya* (Digestive insufficiency), *Ajirna* (indigestion), *Anhah* (Constipation), *Grahani Dosha* (IBS/ Malabsorption Syndrome)	Methanobrevibacter, Disproportion in Firmicutes and Bacteroidetes ratio
Rasavaha Srotas (channels carrying nutrient fluids)	*Jwara* (Fever), *Pandu* (Anemia), *Amavata* (Rheumatoid Arthritis), *Shothroga* (Inflammation)	Low Akkermansia muciniphila, high Enterobacteriaceae
Raktavaha Srotas (channels carrying blood tissue)	*Raktapitta* (bleeding disorders), *Kustha* (skin diseases), *Visarpa* (erysipelas), *Kamala* (Jaundice)	Ruminococcus, Lactobacillus, Desulfovibrio
Mamsavaha Srotas (channels carrying muscle tissue)	*Mamsagata Vata* (muscle stiffness), *Mamsakshaya* (muscle wasting), *Granthi* (tumor)	Faecalibacterium prausnitzii
Medovaha Srotas (channels carrying fat tissue)	*Medoroga* (dyslipidemia), *Prameha* (Diabetes Mellitus), *Shaulya* (Obesity)	High Firmicutes/Bacteroidetes ratio (Obesity), Low Akkermansia muciniphila (Diabetes, metabolic disorders)

Asthivaha Srotas (Channel carrying bone tissue)	*Asthikshaya* (osteoporosis), *Sandhigata Vata* (arthritis), *Asthi Bhagna* (fractures)	Butyrate-producing bacteria (Bone health), Low Bacteroides (Linked with osteoporosis)
Majjavaha Srotas (Channel carrying bone marrow)	*Bhrama* (vertigo), *Murcha* (fainting),	Bifidobacterium, Lactobacillus (Cognitive function, neuroprotection)
Shukravaha Srotas (channels carrying reproductive tissues)	*Shukrakshaya* (low sperm count), *Vandhyatva* (infertility), *Klaibya* (impotence)	Lactobacillus, Bifidobacterium (Semen microbiota), Dysbiosis linked with infertility
Mutravaha Srotas (channels in which urine is formed and excreted)	*Mutrakricha* (dysuria), *Ashmari* (urinary stones), *Prameha* (diabetes), *Mutraghata* (urinary retention)	Enterococcus, E. coli, Proteus (Urinary tract infections)
Purishavaha Srotas (channels in which faeces are formed and excreted)	*Vibandha* (Constipation), *Krimi Roga* (Parasites), *Arshas* (Haemorrhoids)	Low Bifidobacterium, high Methanobrevibacter (Constipation, gut motility issues)
Swedavaha Srotas (Channel of sweat)	*Sweda Vriddhi* (Excess sweating), *Twakroga* (Skin disorders)	Cutibacterium, Staphylococcus (Skin microbiota dysbiosis, metabolic issues)
Manovaha Srotas (Channel of mind)	*Chittodvega* (Anxiety), *Manovyatha* (Depression), *Unmada* (Psychosis), *Apasmara* (Epilepsy)	Low *Bifidobacterium*, high *Clostridium* (Gut-brain axis imbalance)

Discussion

The human gut microbiota plays a crucial role in maintaining physiological balance and health by influencing digestion, immunity, and metabolism. The concept of *Agni* (digestive fire) is central to *Ayurveda* and determines the efficiency of digestion, absorption, and metabolism. The gut microbiota is deeply interlinked with different types of *Agni*. Ayurveda describes the body's functional channels (*srotas*) as pathways responsible for transporting essential substances, and any impairment in these channels results in disease. *Pranavaha Srotas*, responsible for respiratory functions, are affected by conditions such as bronchial asthma, tuberculosis, and heart disease (15), (16). Recent studies indicate a significant gut-lung axis, where alterations in gut microbiota composition (such as an increase in Proteobacteria and a decrease in Firmicutes) contribute to inflammation and immune dysregulation in respiratory diseases (17), (18). *Manda Agni* can lead to the formation of *Ama* (toxins), which can trigger systemic inflammation and aggravate *Pranavaha* disorders (19). *Udakavaha Srotas* regulate water balance in the body and are associated with conditions like diarrhea, dysentery, and acute gastroenteritis (20). Dysbiosis of gut microbiota, particularly an overgrowth of pathogenic Enterobacteriaceae and depletion of beneficial Lactobacillus and Bifidobacterium species, is linked with these diseases (21). In conditions of *Tikshna Agni*, excessive metabolism leads to dehydration and increased gut permeability, making individuals susceptible to gastrointestinal infections (22). *Annavaha Srotas*, responsible for food digestion and nutrient assimilation, are impacted by conditions like anorexia, indigestion, constipation, and irritable bowel syndrome (IBS) (23), (24). Studies suggest that an imbalance in the Firmicutes and Bacteroidetes ratio, along with increased *Methanobrevibacter* species, contributes to constipation and bloating (25). *Manda Agni* results in sluggish digestion and Ama formation, worsening *Grahani Dosha* (IBS-like symptoms) (26), while *Vishama Agni* leads to irregular digestion patterns and microbial fluctuations. *Rasavaha Srotas* transport nutrient fluids and are linked to diseases such as fever, anemia, and rheumatoid arthritis. Dysbiosis, particularly reduced Akkermansia muciniphila and increased Enterobacteriaceae, disrupts immune regulation and contributes to inflammatory disorders (27). *Manda Agni* impairs digestion and nutrient absorption, leading to *Pandu* (anemia) and metabolic deficiencies (28). Low *Bifidobacterium* and *Lactobacillus* found in anemia (29). *Raktavaha Srotas*, responsible for blood circulation, are associated with bleeding disorders, skin diseases, and jaundice (30). Gut microbiota imbalances, including an overgrowth of Desulfovibrio species, can promote endotoxin production, leading to inflammation and oxidative stress in blood and skin-related diseases (31). *Mamsavaha Srotas* (muscle metabolism), *Medovaha Srotas* (fat metabolism), and *Asthivaha Srotas* (bone metabolism) are interrelated through metabolic processes (32). Low levels of Faecalibacterium prausnitzii are linked to muscle wasting (33), while a high Firmicutes/Bacteroidetes ratio is associated with obesity and metabolic disorders (34). In osteoporosis, butyrate-producing bacteria are depleted, impairing bone health (35). *Manda Agni* contributes to poor metabolism and tissue malnutrition, while *Tikshna Agni* can cause excessive catabolism, leading to depletion of muscle and bone mass. *Majjavaha Srotas* (nervous system), *Shukravaha Srotas* (reproductive system), and *Manovaha Srotas* (mental health) are intricately connected to the gut-brain and gut-reproductive axes. Reduced Bifidobacterium and increased Clostridium species are associated with cognitive impairments and neuropsychiatric disorders like anxiety and depression (36). *Manda Agni* leads to neuroinflammation and cognitive dysfunction, whereas *Vishama Agni* contributes to fluctuating mental states and reproductive imbalances (37). Future studies should validate these correlations through molecular research and clinical trials, paving the way for evidence-based integrative healthcare that bridges ancient wisdom with modern science. For example, intake of *Raga Shadava* (classical ayurvedic preparation) stimulates the appetite as described in classical texts. It enhances Agni. To confirm these relations into validated evidence, future research should apply molecular sequencing, metabolomics, and clinical trials, similar to current microbiome studies using 16S rRNA and SCFA profiling, to establish mechanistic and clinical correlations. This approach will strengthen integrative, evidence-driven healthcare models.

Conclusion

Ayurveda recognizes *Agni* as the central regulator of digestion, metabolism, energy production, and overall systemic health; its imbalance leads to *Ama* formation and the development of disease. Modern science identifies gut microbiota as a key regulator of metabolism, immunity, and the gut–brain axis. The convergence of *Agni* and gut microbiota offers a holistic framework for understanding digestive and psychometabolic health. Ayurvedic dietary preparations and lifestyle practices provide natural approaches to positively modulate gut microbiota, thereby promoting metabolic balance and reducing disease risk. This conceptual integration underscores a promising evidence-based, integrative model of digestive and psych metabolic wellness.

Financial support and sponsorship: Nil.

Conflicts of interest: There are no conflicts of interest.

References

1. Agnivesha, Charaka, Dridhabala. Charaka Samhita, Chikitsasthana, 15/5. In: Acharya VJ, editor. Reprint edition. Varanasi: Krishnadas Academy, 2013, p. 453.
2. Agnivesha, Charaka, Dridhabala. Charaka Samhita, Chikitsasthana, 15/4. In: Acharya VJ, editor. Reprint edition. Varanasi: Krishnadas Academy, 2013, p. 453.
3. Agnivesha, Charaka, Dridhabala. Charaka Samhita, Sutrasthana, 12/11. In: Acharya VJ, editor. Reprint edition. Varanasi: Krishnadas Academy, 2013
4. Agnivesha, Charaka, Dridhabala. Charaka Samhita, Chikitsasthana, 15/38. In: Acharya VJ, editor. Reprint edition. Varanasi: Krishnadas Academy, 2013, p. 459.
5. Singh V, Rao MV. Seasonal regimen (Ritucharya) with special reference to Agni and gut microbiota. 2024 Dec,15(S1):157-163. DOI: 10.47552/ijam.v15iS1.5588 [last accessed 01.12.2025]
6. Backhed, F.; Ley, R.E.; Sonnenburg, J.L.; Peterson, D.A.; Gordon, J.I. Host-bacterial mutualism in the human intestine. Science 2005, 307, 1915–1920. DOI:10.1126/science.1104816 [last accessed 01.12.2025]
7. Wong JM, de Souza R, Kendall CW, Emam A, Jenkins DJ. Colonic health: fermentation and short-chain fatty acids. J Clin Gastroenterol. 2006 Mar;40(3):235-43. doi: 10.1097/00004836-200603000-00015. PMID: 16633129. [last accessed 01.12.2025]
8. Rowland I, Gibson G, Heinken A, Scott K, Swann J, Thiele I, Tuohy K. Gut microbiota functions: metabolism of nutrients and other food components. Eur J Nutr. 2018 Feb;57(1):1-24. doi: 10.1007/s00394-017-1445-8. Epub 2017 Apr 9. PMID: 28393285; PMCID: PMC5847071. [last accessed 01.12.2025]
9. Chu J, Feng S, Guo C, Xue B, He K, Li L. Immunological mechanisms of inflammatory diseases caused by gut microbiota dysbiosis: A review. Biomedicine & Pharmacotherapy. 2023 Aug 1; 164:114985. https://doi.org/10.1016/j.biopha.2023.114985 [last accessed 01.12.2025]
10. Zhu X, Han Y, Du J, Liu R, Jin K, Yi W. Microbiota-gut-brain axis and the central nervous system. Oncotarget. 2017 May 10;8(32):53829-53838. doi: 10.18632/oncotarget.17754. PMID: 28881854; PMCID: PMC5581153. [last accessed 01.12.2025]
11. Veena M, Sivaram A, Pradeep K. The role of Agni in epilepsy–A Scoping Review. Kerala Journal of Ayurveda. 2024 Dec 30;3(4). DOI: https://doi.org/10.55718/kja.324 [last accessed 01.12.2025]
12. Ranade A, Gayakwad S, Chougule S, Shirolkar A, Gaidhani S, Pawar SD. Gut microbiota. Current Science. 2020 Aug 10;119(3):451-61. https://www.jstor.org/stable/27138881 [last accessed 01.12.2025]
13. Jnana A, Murali TS, Guruprasad KP, Satyamoorthy K. Prakriti phenotypes as a stratifier of gut microbiome: A new frontier in personalized medicine. Journal of Ayurveda and Integrative Medicine. 2020 Jul 1;11(3):360-5. https://doi.org/10.1016/j.jaim.2020.05.013 [last accessed 01.12.2025]
14. E-Samhita, Charaka Samhita, Vimansthana, Srotovimana 5/8 https://niimh.nic.in/ebooks/ecaraka/?mod=read [last accessed 01.12.2025]
15. Arun PR, M.K.S. V, K.V. V. Understanding of Pranavaha Sroto Moola in the purview of modern physiology. J Ayurveda Integr Med Sci [Internet]. 2024 Jun. 15 [cited 2025 Dec. 2];9(4):110-7. Available from: https://jaims.in/jaims/article/view/3105
16. Mourya M, Yadav S, Chudasama H. Analytical Review of Pranavaha Srotas with Special Reference to Cardiopulmonary Unit. DOI: 10.48165/IRJAY.2024.70906 DOI: 10.48165/IRJAY.2024.70906 [last accessed 01.12.2025]
17. Blainey PC, Milla CE, Cornfield DN, Quake SR. Quantitative analysis of the human airway microbial ecology reveals a pervasive signature for cystic fibrosis. Sci Transl Med 2012; 4:153ra130. DOI:10.1126/scitranslmed.3004458 [last accessed 01.12.2025]
18. 18. Wang J, Li F, Wei H, Lian ZX, Sun R, Tian Z. Respiratory influenza virus infection induces intestinal immune injury via microbiota-mediated Th17 cell–dependent inflammation. J Exp Med 2014;211: 2397–2410. [last accessed 01.12.2025]
19. Yadav PV. Medical Perspective on Ama as per Ayurveda and Modern Consideration: A Review. Journal of Drug Delivery & Therapeutics. 2020 Feb 1;10. DOI:10.22270/jddt.v10i1-s.3861 [last accessed 01.12.2025]
20. Singh A, Agrawal S, Singh D, Patwardhan K. A physiological appraisal of the concept of Srotas with special reference to respiratory physiology. [last accessed 01.12.2025]
21. Carding S, Verbeke K, Vipond DT, Corfe BM, Owen LJ. Dysbiosis of the gut microbiota in disease. Microbial ecology in health and disease. 2015 Dec 1;26(1):26191. https://doi.org/10.3402/mehd.v26.26191 [last accessed 01.12.2025]
22. Mengaji R. Critical Study on Vikalp-Samprapti in Grahani Vyadhi to Bruhstrayi (Doctoral dissertation, Rajiv Gandhi University of Health Sciences (India). [last accessed 01.12.2025]
23. Gupta R. Review of Annavaha Srotas wsr Annavaha Srotas Viddh Lakshana. International Journal of Humanities Education. 2023 Jul 17;11(2):5-11. [last accessed 01.12.2025]
24. Hajarnavis MS. Epidemiological survey for the assessment of agnidushtikar hetus (Etiological Factors) of irritable bowel syndrome (Doctoral dissertation, Tilak Maharashtra Vidyapeeth). [last accessed 01.12.2025]
25. Pozuelo M, Panda S, Santiago A, Mendez S, Accarino A, Santos J, Guarner F, Azpiroz F, Manichanh C. Reduction of butyrate- and methane-producing microorganisms in patients with Irritable Bowel Syndrome. Scientific reports. 2015 Aug 4;5(1):12693. [last accessed 01.12.2025]
26. Dubey JP. Analytical Study of Ama with Respect to Change in Plasma During Exacerbation (Amavastha) and Resolution (Niramavastha) (Doctoral dissertation, Rajiv Gandhi University of Health Sciences (India). [last accessed 01.12.2025]
27. Weiss GA, Hennet T. Mechanisms and consequences of intestinal dysbiosis. Cellular and Molecular Life Sciences.

2017 Aug;74(16):2959-77. https://doi.org/10.1007/s00018-017-2509-x [last accessed 01.12.2025]
28. Monika, ; Mahapatra, Arun Kumar[1]; Rajagopala, S.. Efficacy of Vidangadilauha in the management of Panduroga (~iron deficiency anemia) in adolescent girls. International Journal of Ayurveda Research 5(3):p 192-198, Jul–Sep 2024. | DOI: 10.4103/ijar.ijar_79_23 [last accessed 01.12.2025]
29. Balamurugan R, Mary RR, Chittaranjan S, Jancy H, Devi RS, Ramakrishna BS. Low levels of fecal lactobacilli in women with iron-deficiency anemia in south India. British journal of nutrition. 2010 Oct;104(7):931-4. https://doi.org/ 10.1017/S0007114510001637 [last accessed 01.12.2025]
30. Madhukar Ls, Nivrutti Ba, Bhatnagar V, Nathani S, Bhatnagar S. Critical appraisal on raktavaha srotas in context to raktapradoshaj vyadhi. 2016 https://doi.org/10.20959/wjpr20171-7657 [last accessed 01.12.2025]
31. Singh SB, Carroll-Portillo A, Lin HC. Desulfovibrio in the gut: the enemy within?. Microorganisms. 2023 Jul 7;11(7):1772. https://doi.org/10.3390/microorganisms11071772 [last accessed 01.12.2025]
32. Lahange sm, bhangare an. Critical appraisal on concept of srotas in ayuveda and its implication in clinical practice. World journal of pharmaceutical research. 2016 sep 12;5(11). https://doi.org.10.20959/wjpr201611-7327 [last accessed 01.12.2025]
33. Ni J, Yin Y, Liang P, Zheng Y, Li Y, Pang L, Zhong X, Hu J. Faecalibacterium prausnitzii Suppresses Mitophagy to Alleviate Muscle Atrophy in Chronic Renal Failure with Protein-Energy Wasting. APMIS. 2025 Mar;133(3): e70014. https://doi.org/10.1111/apm.70014 [last accessed 01.12.2025]
34. Magne F, Gotteland M, Gauthier L, Zazueta A, Pesoa S, Navarrete P, Balamurugan R. The firmicutes/bacteroidetes ratio: a relevant marker of gut dysbiosis in obese patients? Nutrients. 2020 May 19;12(5):1474. https://doi.org/10.3390/nu12051474 [last accessed 01.12.2025]
35. Li Z, Wang Q, Huang X, Wu Y, Shan D. Microbiome's role in musculoskeletal health through the gut-bone axis insights. Gut Microbes. 2024 Dec 31;16(1):2410478. https://doi.org/10.1080/19490976.2024.2410478 [last accessed 01.12.2025]
36. Halverson T, Alagiakrishnan K. Gut microbes in neurocognitive and mental health disorders. Annals of Medicine. 2020 Nov 16;52(8):423-43. https://doi.org/10.1080/07853890.2020.1808239 [last accessed 02.12.2025]
37. Divya D, Kumari S. Critical Understanding of Agni and Artavakshaya in Women's Health from Ayurveda Perspective. International Journal of Ayurveda360. 2024 Dec 15;1(3):134-46. doi: https://doi.org/10.5281/zenodo.14564766. [last accessed 02.12.2025].

*****