



Review Article

AYURVEDIC PERSPECTIVE ON PARKINSONISM THROUGH THE BRAIN-GUT AXIS

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ABSTRACT

Parkinsonism is a progressive neurodegenerative syndrome characterized by tremor, rigidity, bradykinesia, and postural instability that results in significant deterioration in quality of life. New evidence indicates that the brain-gut axis is a key player in the initiation and progression of Parkinsonism. The brain-gut axis is a bidirectional communication system that connects the central nervous system, enteric nervous system, gut microbiota, immune responses, and neuroendocrine pathways. According to Ayurveda, the clinical features of Parkinsonism are similar to *Kampavata*, which is mainly due to the vitiation of *Vata Dosha*. Classical Ayurvedic concepts also focus on the role of *Agni* (digestive and metabolic fire), *Ama* (metabolic toxins), *Srotodushti* (channel dysfunction), and involvement of *Majja Dhatu* that together lend a holistic approach to understanding of the gut-brain relationship. This comprehensive review synthesizes current scientific evidence on the brain-gut axis with Ayurvedic principles to investigate possible pathophysiological correlations and therapeutic implications. The review elaborates the role of correction of digestive dysfunction, restoration of gut microbial balance, *Ama Pachana*, *Vata Shamana*, *Rasayana therapy* and appropriate *Panchakarma* interventions in neuroprotection and symptomatic improvement. This review suggests that an integration of traditional Ayurveda and modern neuroscience may be a way forward in early intervention, personalized management and translational research in Parkinsonism.

INTRODUCTION

In Ayurveda, Parkinson's disease is most closely related to *Kampavata*, a disorder caused by the vitiation of *Vata dosha*, particularly in the *Majja Dhatu* (nervous system)^[1,2,3]. Contemporary science talks about the gut-brain axis, and Ayurveda explained this connection centuries ago through the relationship between *Agni* and *Vata*. This provides a parallel conceptual framework for understanding connection^[4,5]. Therefore, this review explores Parkinsonism through the lens of Ayurveda therapeutic strategies, including herbal medicine^[6], *Panchkarma*^[7] and dietary regulation. Literature from biomedical databases and classical Ayurvedic texts was analyzed. Latest surveys and researches also indicate roles of gut in the origin of the disease confirming the principal of Ayurveda^[8,9].

Parkinsonism is traditionally understood as a central nervous system disorder caused by degeneration of dopaminergic neurons^[10]. However, recent advances shows the significant role of the brain-gut axis, a bidirectional system of communication linking the gastrointestinal tract and the central nervous system^[11]. Gastrointestinal symptoms such as constipation often precede motor manifestations, suggesting that pathological processes may originate in the gut and subsequently affect the brain^[5]. Alterations in gut microbiota, increased intestinal permeability, and chronic inflammation are now considered key contributors to disease progression^[12]. In Ayurveda, a disease having closely related clinical features, *Kampavata*, has described through the correlation of *Agni*, *Ama*, and *Vata dosha*. Parkinsonism can thus be interpreted as a manifestation of *Kampavata* with underlying gut-origin pathology^[1,13]. *Agni* is considered the foundation of health^[4]. When *Agni* becomes *Manda*, it leads to improper digestion of food resulting in formation of *Ama* (improper metabolised part)^[14]. This *Ama* circulates through the body and vitiates *Doshas* and obstruct *Srotas* (channels) leading to disease manifestation^[15]. Thus, *Mandagni*

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(impaired metabolism/digestion) is said to be the root cause of all disorders whether physical, mental or neurological^[16]. All the *Acharyas* of Ayurveda has emphasized the role of *Agni* for origin of disease since long ago described in *Charak samhita*, *Sushrut samhita* and *Ashtang Hridaya*. *Acharya Charak* has clearly mentioned all diseases originates due to *Mandagni*–“*Rogāḥ Sarvepi mandāgnau (Ch.sutra -28/7)*”. Gut has been described as the major place for *Agni* which offers a deep connection between Parkinson’s disease and gut health.

AIM

To determine the association between the *Agni* (gut health) and neurological disorder like Parkinsonism.

OBJECTIVE

To study the *Agni-Vata* relationship and to establish the co-relation between Gut-brain axis to Ayurveda principles as well as evaluating their relevance in managing Parkinsonism.

MATERIAL AND METHODS

A narrative review was conducted using: Data Sources like PubMed, Scopus, and Google Scholar, AYUSH Research Portal, Classical Ayurvedic texts (*Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Hridaya*).

- One of the studies was conducted in 2021-2022 on 50 patient at Ghent University, Belgium and published in April 2025
- Another study was published in May 2024 by Hiroshi Nishiwaki from Nagoya University in Japan on 94 patients.
- Data was collected on the basis of given treatment of delivery of gut microorganisms from healthy donors.
- Several studies have been looked for evidence of changes in the composition of the gut microbiome.
- In the largest such study so far, published in 2022, researchers gathered stool samples from 490 individuals with Parkinson’s disease and 234 healthy controls and sequenced the DNA of the microbes present. Some of selected studies analysed which provide a base to work on the neurodegenerative disease like Parkinson through ayurveda’s principal of managing the disease.

Selection Criteria

Inclusion

Peer-reviewed articles on Parkinsonism and gut-brain interactions Studies on Ayurvedic interventions affecting neurological or gastrointestinal health

Exclusion

Non-scientific literature

Duplicate and irrelevant studies

RESULT

1) Brain-Gut Axis in Parkinsonism

According to contemporary science, the brain-gut axis involves neural, hormonal, and immunological pathways connecting the gut and brain as under:^[17,18]

- Misfolded proteins may originate in the gut and travel via the vagus nerve.^[19]
- Gut microbiota imbalance contributes to inflammation^[12,20]
- Increased intestinal permeability allows toxins to enter circulation^[21]

These processes may initiate or accelerate neurodegeneration.^[22]

2) Ayurvedic Correlation

Ayurveda explains similar mechanisms through:

- *Mandagni* (impaired digestion) leading to *Ama* formation.^[14]
- Circulation of *Ama* causing systemic toxicity.^[14]
- Aggravation of *Vata dosha*, particularly affecting the nervous system.^[2]

This entire pathogenesis may be described in detail as:

- Improper diet → weak *Agni* → formation of *Ama in Pakvashaya*.
- *Ama* accumulation and *Vata* aggravates → aggravated *Vata* moves upward (*Urdhwagati*) → disturb *Majjadhatu* (brain /nerves)
- Resulted in → tremors, rigidity, sleep disturbances, anxiety, slowness, *Kampavata* symptoms.
- Thus, there is link to Gut – Brain health.
- *Vata* governs the nervous system^[23] and resides in the *Pakvashaya*^[24], any disturbance here can reflect in neurological symptoms such as anxiety^[25], tremors or even Parkinson like signs.^[2]
- *Acharya Charak* has stated that *pakvashaya* is principle site of *Vata*– “*Vayoh sthanam Pakvashaya*” (*Ch.sutra -12/8*) so vitiation of *pakvashaya* may leads to vitiation of *Vata*. Since all movement in the body is govern by *Vata*. Hence, *Vata* imbalance results in origin of *Vatapradhana* neurological disease like Parkinsonism. Thus, Parkinsonism (*Kampavata*) can be viewed as a disorder rooted in gastrointestinal dysfunction.

3) Ayurvedic Therapeutic Strategies Targeting Brain-Gut Axis

Deepana-Pachana (Digestive Correction)

- Enhances digestive fire (*Agni*).^[4]
- Reduces toxin accumulation (*Ama*).^[14]
- Improves nutrient absorption and metabolic balance.^[26]

Herbal Interventions

- a) *Mucuna pruriens*: Supports dopamine levels and motor function^[6,27]
- b) *Withania somnifera*: Reduces stress and neuroinflammation^[28]
- c) *Bacopa monnieri*: Improves cognition and neuronal signaling^[29]

Gut-modulating herbs may indirectly influence neurological health.^[30]

Panchakarma Therapies

- a) *Basti* (medicated enema): Key therapy for regulating *Vata* and gut function.^[31]
- b) *Abhyanga* and *Swedana*: Improve circulation and reduce stiffness.^[29]
- c) *Shirodhara*: May help regulate neuroendocrine responses.^[32]

These therapies may act by restoring gut balance and reducing systemic inflammation.

Role of Diet and Lifestyle

- a) Consumption of easily digestible, warm, and unctuous foods.^[33]
- b) Avoidance of heavy, processed, and toxin-forming diets.^[33]
- c) Inclusion of probiotics and fiber-rich foods.^[34]
- d) Stress management through yoga and meditation.^[35]

Clinical Evidences

- a) Studies indicate early gastrointestinal involvement in Parkinsonism.^[5,8]
- b) Ayurvedic treatments targeting digestion show symptomatic improvement.^[13,36]
- c) Integrative approaches demonstrate better outcomes in quality of life.

However, evidence remains limited and requires further validations.

Comparative Analysis of Brain-Gut Axis and Ayurvedic Pathophysiology in Parkinsonism

Brain-Gut Axis Concept	Description (Modern)	Ayurvedic Correlation	Ayurvedic Explanation	References
Gut microbiota dysbiosis	Imbalance of intestinal flora affecting immunity and neural signaling.	<i>Ama</i> formation	Impaired digestion leads to toxic metabolites disturbing systemic balance.	Cryan JF et al., 2019; Sharon G et al., 2016
Increased intestinal permeability ("leaky gut")	Toxins and inflammatory mediators enter systemic circulation.	<i>Ama visha</i>	Circulating toxins spread <i>via Rasa dhatu</i>	Fasano A., 2012; Tripathi KD, Ayurveda texts
Vagus nerve signaling	Neural communication pathway between gut and brain.	<i>Prana Vata</i>	<i>Prana Vata</i>	Bonaz B et al., 2018; Charaka Samhita
Neuro-inflammation	Chronic inflammation leading to neuronal damage.	<i>Pitta dushti + Ama</i>	Inflammatory processes due to aggravated <i>Pitta</i> and toxins.	Hirsch EC, Hunot S., 2009; Sushruta Samhita
Alpha-synuclein aggregation	Misfolded protein accumulation spreading from gut to brain.	<i>Margavarana of Vata</i>	Obstruction in channels disrupts <i>Vata</i> movement.	Braak H et al., 2003; Ashtanga Hridaya
Dopamine deficiency	Loss of dopaminergic neurons causing motor dysfunction.	<i>Kampavata (Vata prakopa)</i>	<i>Vata</i> imbalance leads to tremors and impaired movements.	Kalia LV, Lang AE. Parkinson's disease. Lancet. 2015.
Oxidative stress	Free radical damage causing neuronal degeneration.	<i>Dhatu kshaya</i>	Degeneration of tissues, especially <i>Majja dhatu</i> .	Jenner P., 2003; Sushruta Samhita
Gut-brain inflammation axis	Interaction of immune, neural, and endocrine pathways.	<i>Agni dushti</i>	Impaired digestion leads to systemic disease manifestation.	Mayer EA., 2011; Charaka Samhita
Early GI symptoms (constipation)	Pre-motor feature of Parkinsonism.	<i>Apana Vata dushti</i>	Dysfunction of <i>Apana Vata</i> affects bowel regulation.	Cersosimo MG, Benarroch EE., 2012; Ashtanga Hridaya
Microbial metabolite imbalance	Altered metabolites (e.g., SCFAs) affecting brain function	<i>Agni</i> imbalance	Improper metabolism affects nutrient transformation	Dalile B et al., 2019; Ayurveda principles

DISCUSSION

The brain-gut axis provides a crucial link between gastrointestinal dysfunction and neurodegeneration in Parkinsonism.^[11] Ayurveda, with its emphasis on digestion and systemic balance, offers a framework that aligns closely with these modern findings.^[33] By addressing *Agni*, reducing *Ama*, and regulating *Vata dosha*, Ayurvedic therapies may influence both gut health and neurological function.^[2] The use of *Mucuna pruriens* offers a direct biochemical mechanism^[27], while *Panchakarma* therapies contribute through detoxification and regulatory effects. This integrative perspective highlights the importance of treating Parkinsonism not merely as a brain disorder but as a systemic condition involving gut dysfunction^[38].

Challenges include

- Limited large-scale clinical trials.
- Need for mechanistic studies linking Ayurveda with microbiome science.
- Standardization of treatment protocols.

CONCLUSION

The brain-gut axis plays a pivotal role in the pathogenesis of Parkinsonism, offering new avenues for therapeutic intervention. Ayurveda provides a holistic and biologically plausible approach by targeting digestive health, systemic balance, and neurological function. Integrating Ayurvedic principles with modern biomedical research may enhance the management of neurodegenerative disorders and improve patient outcomes

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