



# *VATA DOSHA* AND ITS ROLE IN NEUROPHYSIOLOGICAL REGULATION: AN INTEGRATIVE *AYURVEDIC* PERSPECTIVE WITH SPECIAL REFERENCE TO *BASTI* THERAPY

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**Abstract: Background:** *Vata Doṣa* is considered the primary regulatory principle governing all physiological movements and functional activities in Ayurveda. Classical Ayurvedic texts describe *Vata* as responsible for neural communication, sensory perception, motor activity, respiration, circulation, and excretory functions. These descriptions demonstrate close functional similarity with the regulatory role of the nervous system described in modern neurophysiology.

**Objective:** To analyze the Ayurvedic concept of *Vata Doṣa* and correlate its physiological functions with modern neurophysiological principles, with special reference to the therapeutic role of *Basti* therapy.

**Methods:** A narrative integrative review was conducted based on classical Ayurvedic literature, including *Charaka Saṃhita* and *Aṣṭāṅga Hṛdaya*, along with contemporary scientific literature from standard physiology textbooks and peer-reviewed journals related to neurophysiology, enteric nervous system, gut–brain axis, and neuroenteric regulation. Classical descriptions were critically interpreted and correlated with modern scientific concepts.

**Results:** Classical Ayurvedic descriptions identify *Vata Doṣa* as the governing factor of movement, communication, and coordination within the body. Functional attributes of *Vata* show conceptual parallels with neural impulse transmission, autonomic regulation, and systemic physiological integration. The colon (*Pakvasaya*), described as the principal seat of *Vata*, corresponds functionally with the enteric nervous system and gut–brain axis recognized in modern science. *Basti* therapy, administered at the primary seat of *Vata*, may exert therapeutic effects through modulation of enteric neural activity, autonomic balance, and neuroendocrine signaling.

**Conclusion:** An integrative interpretation suggests that *Vata Doṣa* represents a neurophysiological regulatory principle coordinating bodily functions. Understanding *Basti* therapy through gut–brain axis mechanisms provides a scientific perspective for traditional Ayurvedic practice and supports the development of integrative therapeutic approaches for neurological and functional disorders.

**Index Terms** -*Vata Doṣa*, Neurophysiology, Nervous System, *Basti* Therapy, Gut–Brain Axis, Enteric Nervous System.

## INTRODUCTION

Ayurveda, the traditional system of medicine of India, describes the functioning of the human body through the dynamic interaction of three fundamental regulatory principles known as *Doṣas*: *Vata*, *Pitta*, and *Kapha*. Among these, *Vata Doṣa* is regarded as the most essential and dominant factor responsible for all forms of movement and communication within the body. Classical Ayurvedic texts emphasize that *Vata* governs both physiological and psychological functions and acts as the primary force that initiates and regulates the activities of the other *Doṣas* and bodily systems.<sup>1</sup>

Acharya Charaka describes *Vata* as the sustaining force of life, responsible for maintaining structural and functional integrity. It regulates vital processes such as respiration, circulation, neural activity, sensory perception, motor coordination, speech, and excretory functions.<sup>1</sup> Without the proper functioning of *Vata*, other physiological processes cannot operate effectively. This central regulatory role suggests that *Vata* represents a comprehensive control mechanism that coordinates bodily functions at both systemic and cellular levels.

From a modern scientific perspective, the nervous system performs a similar role as the master regulatory system of the body. It coordinates physiological activities through electrical impulses, neurotransmitter release, and autonomic regulation, ensuring communication between different organs and systems. The nervous system integrates sensory input, processes information, and generates appropriate motor and autonomic responses to maintain homeostasis.<sup>5</sup> This functional similarity between *Vata Doṣa* and the nervous system provides a strong basis for integrative interpretation.

Ayurveda further identifies the colon (*Pakvasaya*) as the principal site of *Vata* and emphasizes its importance in maintaining physiological balance.<sup>8</sup> The colon is now recognized in modern science as a critical component of the enteric nervous system, which contains an extensive network of neurons capable of independent function and bidirectional communication with the central nervous system. This enteric nervous system forms a key component of the gut–brain axis, which plays a crucial role in regulating neurophysiological and neuroendocrine functions.<sup>9</sup>

One of the most important therapeutic interventions for *Vata* disorders described in Ayurveda is *Basti* therapy, or medicated enema. Classical texts describe *Basti* as *Ardha Chikitsa*, meaning it constitutes half of all therapeutic interventions, highlighting its profound regulatory effects on *Vata*.<sup>11</sup> This statement reflects the central importance of regulating *Vata* at its primary seat to restore systemic physiological balance. Modern understanding of gut–brain communication suggests that therapeutic interventions targeting the colon can influence neural, endocrine, and autonomic functions, providing a plausible scientific basis for the effectiveness of *Basti* therapy.<sup>12</sup>

Despite the profound conceptual parallels between *Vata Doṣa* and modern neurophysiology, limited integrative research has explored this relationship in depth. Understanding *Vata* as a neurophysiological regulatory principle may provide valuable insights into the fundamental mechanisms underlying Ayurvedic physiology and therapeutic interventions.

Therefore, this integrative review aims to examine the classical Ayurvedic concept of *Vata Doṣa* and correlate it with modern neurophysiological principles. It also explores the scientific basis of *Basti* therapy as a neuro-enteric intervention and its potential role in regulating neuro-physiological functions through gut–brain axis modulation.

## CONCEPT OF VATA DOSHA IN AYURVEDA

In Ayurveda, *Vata Doṣa* is regarded as the fundamental regulatory principle responsible for all movement and functional activity within the body. It is formed from the predominance of the *Akaśa* (ether) and *Vayu* (air) *Mahabhūtas*, which impart the properties of mobility, subtlety, and dynamic regulation.<sup>1</sup> These inherent characteristics enable *Vata Doṣa* to govern physiological processes that involve motion, communication, and coordination.

Acharya Charaka describes the significance of Vata in the following verse:

“वायुस्तन्त्रयन्तधरः प्राणोदानसमानव्यानापानात्मा ।  
प्रवर्तकश्चेष्टानामुच्चावचानां नियन्ता प्रणेता च मनसः ।  
सर्वेन्द्रियाणामुद्योजकः... आयुषोऽनुवृत्तिप्रत्ययभूतो भवत्यकुपितः ॥”<sup>1</sup>

This verse indicates that *Vata* is responsible for sustaining life, providing strength, and maintaining the structural and functional integrity of the body. It emphasizes the central role of *Vata* as the master regulator of physiological functions.

The functional attributes of *Vata Doṣa* are determined by its specific qualities (*Guṇa*), which include *Rūkṣa* (dry), *Laghu* (light), *Śīta* (cold), *Khara* (rough), *Sūkṣma* (subtle), and *Chala* (mobile).<sup>3</sup> These qualities allow *Vata* to permeate all tissues and regulate dynamic physiological activities. The subtle nature (*Sūkṣma Guṇa*) enables it to influence microscopic processes, while its mobile nature (*Chala Guṇa*) allows it to initiate and control movement.

The primary functions (*Karma*) of *Vata Doṣa* include regulation of respiration, circulation, neural communication, sensory perception, motor activity, speech, and excretory functions.<sup>1</sup> Acharya Sharangadhara states:

“पित्तं पङ्गुं कफः पङ्गुं पङ्गवो मलधातवः ।  
वायुनाऽयत्र नीयन्ते तत्र गच्छन्ति मेघवत् ॥”<sup>2</sup>

This indicates that *Vata* is responsible for initiating and regulating the activities of other physiological systems, highlighting its role as the primary functional regulator.

Ayurveda further classifies *Vata Doṣa* into five subtypes known as *Panca Vata*, each responsible for specific physiological functions:

- **Praṇa Vata** – regulates respiration, cognitive functions, and sensory perception
- **Udana Vata** – controls speech, expression, and voluntary effort
- **Vyana Vata** – governs circulation and motor coordination
- **Samana Vata** – regulates digestion and assimilation
- **Apana Vata** – controls excretory and reproductive functions<sup>1</sup>

These subdivisions demonstrate the extensive regulatory role of *Vata Doṣa* in coordinating physiological and neurological functions throughout the body.

## NEUROPHYSIOLOGICAL CORRELATION OF VATA DOSHA

The functional characteristics of *Vata Doṣa*, show strong parallels with the modern understanding of the nervous system, which serves as the primary regulatory network responsible for coordinating physiological activities. The nervous system regulates bodily functions through electrical impulses known as action potentials, which transmit information between neurons and target tissues.<sup>5</sup> This process of rapid signal transmission closely corresponds to the mobile (*Chala*) and subtle (*Sūkṣma*) qualities of *Vata Doṣa*.

Neural communication involves the generation and propagation of electrical signals along nerve fibers, followed by neurotransmitter release at synapses. These processes regulate sensory perception, motor control, reflexes, and autonomic functions.<sup>6</sup> Similarly, Ayurveda attributes these regulatory functions to *Vata Doṣa*, which governs sensory and motor activities.

The autonomic nervous system, which regulates involuntary physiological functions such as heart rate, respiration, digestion, and excretion, also demonstrates functional similarity to *Vata Doṣa*.<sup>7</sup> The autonomic nervous system maintains homeostasis by continuously adjusting physiological processes in response to internal and external stimuli. This regulatory role aligns with the Ayurvedic concept of *Vata* as the controller of physiological movement and coordination.

Furthermore, the nervous system plays a crucial role in integrating sensory input and generating appropriate responses. This integrative function reflects the coordinating role of *Vata Doṣa*, which ensures the proper functioning of bodily systems.

## **PAKVAŚAYA AS THE PRINCIPAL SEAT OF VATA DOSHA**

Ayurveda identifies the colon (*Pakvasaya*) as the primary seat (*Mula Sthana*) of *Vata Doṣa*, emphasizing its central role in regulating physiological movement and functional coordination within the body. Classical Ayurvedic descriptions associate *Vata* regulation with the large intestine due to its involvement in processes such as absorption, elimination, and regulation of bodily movements.<sup>8</sup>

Modern science recognizes the colon as a major component of the enteric nervous system, which contains an extensive network of neurons capable of independently regulating gastrointestinal function. This enteric nervous system communicates continuously with the central nervous system through neural pathways, forming the gut–brain axis.<sup>9</sup>

The gut–brain axis plays a critical role in regulating neuro-physiological functions, including autonomic activity, stress responses, emotional regulation, and systemic homeostasis. Neural, endocrine, and immune signaling pathways enable bidirectional communication between the gastrointestinal tract and the brain.<sup>10</sup>

This functional relationship provides a scientific basis for understanding the Ayurvedic concept that the colon serves as the principal regulatory site of *Vata Doṣa*.

## **BASTI THERAPY AS ARDHA CHIKITSA OF VATA DOSA**

Ayurveda considers Basti therapy to be the most effective therapeutic intervention for disorders caused by *Vata Doṣa* and emphasizes its central role in restoring physiological balance. Classical Ayurvedic literature highlights Basti as a major therapeutic modality due to its direct action on the primary seat of *Vata Doṣa* in the colon.<sup>11</sup>

*Basti* involves the administration of medicated substances through the rectal route, thereby directly influencing the gastrointestinal environment and the functional regulation of *Vata Doṣa*. By acting at the principal anatomical site associated with *Vata*, this therapy aims to restore systemic homeostasis and normalize physiological functions.

Modern scientific research suggests that therapeutic interventions targeting the colon can influence autonomic nervous system activity, neuro-endocrine regulation, and gut–brain communication pathways.<sup>12</sup> The enteric nervous system communicates bi directionally with the central nervous system through neural pathways, including vagal signaling mechanisms that regulate both physiological and psychological processes.<sup>13</sup>

Through modulation of enteric neural activity and gut–brain interactions, *Basti* therapy may contribute to restoration of autonomic balance and improvement of neuro-physiological regulation.

## **INTEGRATIVE INTERPRETATION**

Based on classical Ayurvedic descriptions and contemporary neuro-physiological understanding, *Vata Doṣa* can be interpreted as a functional regulatory principle responsible for neural control and physiological coordination within the human body. Its role in governing movement, communication, and dynamic functional activity shows strong conceptual correspondence with the regulatory functions of the nervous system.

The classical identification of the colon as the principal seat of *Vata Doṣa* demonstrates notable alignment with modern scientific understanding of the enteric nervous system and the gut–brain axis. These systems play a crucial role in maintaining neuro-physiological homeostasis through continuous bidirectional communication between the gastrointestinal tract and the central nervous system.

The therapeutic effectiveness of Basti therapy may therefore be understood through its potential influence on enteric neural regulation, autonomic balance, and integrated neuro-physiological functioning, providing an integrative framework that bridges Ayurvedic principles with modern neuroscience.

## DISCUSSION

The integrative analysis of *Vata Doṣa* in relation to modern neurophysiology reveals significant conceptual and functional parallels that support its interpretation as a fundamental regulatory principle governing neural communication and physiological coordination. Ayurveda describes *Vata Doṣa* as the initiator and regulator of all bodily activities, emphasizing its essential role in sustaining life and maintaining functional integrity.<sup>1</sup> This description aligns closely with the modern understanding of the nervous system, which serves as the primary regulatory network responsible for coordinating physiological processes through electrical and chemical signaling.<sup>5</sup>

The defining qualities (*Guṇa*) of *Vata Doṣa*, particularly *Chala* (mobility) and *Sukṣma* (subtlety), provide a conceptual framework for understanding its neurophysiological functions. Neural impulses are transmitted rapidly across highly specialized neuronal networks through electrochemical gradients, demonstrating both mobility and subtlety at the cellular level.<sup>5</sup> These characteristics reflect the functional attributes described in Ayurvedic literature, suggesting that *Vata Doṣa* represents the regulatory principle underlying neural signal transmission.

The classification of *Vata Doṣa* into five subtypes (*Praṇa*, *Udana*, *Vyana*, *Samana*, and *Apana Vata*) further illustrates its extensive regulatory role.<sup>3</sup> These subdivisions correspond closely with major functional divisions of the nervous system. For example, *Praṇa Vata*, which regulates respiration and cognitive functions, parallels the role of the brainstem and autonomic centers responsible for respiratory control and autonomic regulation.<sup>6</sup> Similarly, *Vyana Vata*, which governs circulation and movement, corresponds to autonomic and motor nervous system functions that regulate cardiovascular activity and muscular coordination.<sup>7</sup>

One of the most significant aspects of the Ayurvedic concept of *Vata Doṣa* is its primary localization in the colon (*Pakvaśaya*).<sup>8</sup> This classical description demonstrates remarkable correlation with modern understanding of the enteric nervous system, often referred to as the “second brain.”<sup>9</sup> The enteric nervous system contains millions of neurons capable of autonomous function and extensive communication with the central nervous system through neural, endocrine, and immune pathways.<sup>10</sup> This bidirectional communication forms the gut–brain axis, which plays a critical role in regulating physiological and psychological processes.

The therapeutic significance of *Basti* in regulating *Vata Doṣa* further supports this integrative interpretation. Ayurveda emphasizes *Basti* as a principal therapeutic intervention for *Vata* disorders.<sup>11</sup> This reflects an understanding of the regulatory importance of the colon in maintaining physiological balance. Modern scientific evidence demonstrates that therapeutic interventions targeting the colon can influence autonomic nervous system activity, neuroendocrine signaling, and central nervous system function.<sup>12</sup> The rectal route allows direct interaction with enteric neural networks, which can modulate neural signaling and autonomic regulation.

Furthermore, the gut–brain axis plays a crucial role in regulating emotional and cognitive functions. The enteric nervous system communicates with the brain through neural pathways, including the vagus nerve, and influences neurotransmitter production such as serotonin, which is essential for mood regulation.<sup>13</sup> This provides a plausible scientific explanation for the effectiveness of *Basti* therapy in managing neurological and psychological disorders described as *Vataja Vyadhi* in Ayurveda.

The integrative interpretation of *Vata Doṣa* as a neurophysiological regulatory principle provides a unified framework that bridges classical Ayurvedic knowledge and modern neuroscience. It highlights the relevance of Ayurvedic concepts in understanding complex physiological regulatory mechanisms and supports the scientific basis of traditional therapeutic interventions such as *Basti* therapy.

## CONCLUSION

*Vata Doṣa* represents the fundamental regulatory principle governing movement, communication, and coordination of physiological functions in the human body. Classical Ayurvedic literature describes *Vata* as the primary force responsible for neural activity, sensory perception, motor function, respiration, circulation, and excretion, which closely correspond to the regulatory roles attributed to the nervous system in modern neurophysiology.

The identification of the colon (*Pakvaśaya*) as the principal seat of *Vata Doṣa* demonstrates significant conceptual alignment with contemporary understanding of the enteric nervous system and the gut-brain axis. The enteric nervous system functions as an important neuro-physiological regulatory network that maintains continuous communication with the central nervous system and influences systemic physiological regulation.

*Basti* therapy, recognized as a principal therapeutic intervention for *Vata Doṣa*, represents targeted approach acting at the primary regulatory site of *Vata*. Modern scientific evidence supporting gut-based therapeutic modulation of neural, autonomic, and neuro-endocrine pathways provides a rational scientific basis for understanding the therapeutic effectiveness of *Basti* in neuro-physiological regulation.

The integrative interpretation of *Vata Doṣa* as a neurophysiological regulatory principle offers a meaningful conceptual bridge between Ayurveda and modern neuroscience. Such an understanding enhances the scientific relevance of classical Ayurvedic principles and opens new possibilities for developing integrative therapeutic strategies for neurological and functional disorders.

Further interdisciplinary research integrating Ayurvedic concepts with contemporary biomedical science is necessary to elucidate the underlying neuro-physiological mechanisms of Ayurvedic therapies and to establish their role within modern integrative medicine

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