



DASHA VIDHA VATA: THE ORCHESTRATORS OF HUMAN PHYSIOLOGICAL REGULATION

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ABSTRACT

The foundation of Ayurvedic medicine is the concept of Tridoshas, which is based on the fundamental idea that the Vata Dosha is the fundamental driving force, or "Tantra Yantra Dhara," and that this principle serves as the foundation for all of the neurological and dynamic processes occurring within the human body. While the basic texts like Brihat Trayi discuss about the five major life forces or "Pancha Maha Prana", including Prana, Udana, Samana, Vyana, and Apana, the other texts such as Sharangdhara Samhita, Gheranda Samhita, and Shiva Samhita talk about the five minor forces or "Pancha Upa Pranas" namely, Naga, Kurma, Krikara, Devadatta, and Dhananjaya making up the "Dasha Vidha Vata". This article attempts to fill the gap between the physiological concepts of Ayurvedic thoughts and the advancements made in the science of Neurobiology. In this context, while the "Maha Pranas" control "homeostasis" or respiratory, circulatory, digestive and excretory processes, the "Upa Pranas" take care of the defensive actions such as sneezing, yawning, blinking and the integrity of the cells.

KEYWORDS: *Ayurveda, Dasha Vidha Vata, Pancha Prana, Upa Prana, Neurophysiology, Autonomic Nervous System, Gheranda Samhita, Shiva Samhita.*

INTRODUCTION

Ayurveda is an age-old science of medicine that has grown over time and has provided many

proven ideas which can be found even in the present times. Basic Concepts of Ayurveda: The basic concepts of Ayurveda have their roots in the “Preventive and Promotional Health theory” of Tridosha. The Bio-Energies of man have been categorized into three types – “Vata, Pitta, and Kapha”. Out of these types, “Vata Dosha” comprising mostly of the “Akasha and Vayu Mahabutas” i.e., Air is given prime importance.^[1] Vata can be called as “Anila”, meaning “which blows and moves” or the “Motive Force” for the other two “Doshas and Dhatus and Malas.^[2]

According to the ancient texts of Ayurveda, namely “Charaka and Sushruta Samhitas,” the type of “Vata” has been categorized into five different functions as “Pancha Maha Prana” i.e., Prana, Udana, Samana, Vyana, and Apana Vata”. Vata’s functions are considered to be “macroscopic pillars for sensation, expression, digestion, and elimination of water, respectively.^[3,4] For gaining an extensive knowledge about human physiology, especially autonomic reflexes, it becomes imperative to go through the concept of Dasha Vidha Vata mentioned in the later literature like Sharangdhara Samhita^[5], Gheranda Samhita^[6], and Shiva Samhita.^[7] The ten Vatas consist of five Upa Pranas named as Naga, Kurma, Krikara, Devadatta, and Dhananjaya. In modern times, the significance of these ten Vatas is analyzed in terms of their Sthana (anatomical location) and Karma (function) based on Advanced System Physiology concept.

OBJECTIVES OF THE STUDY

1. To fill the gap between the physiological ideas of Ayurvedic thought and the advances that have been achieved in the field of Neurobiology.
2. To critically appraise the ten Vayus (Dasha Vidha Vata) in terms of their anatomical positions and actions according to classical references including the Gheranda and Shiva Samhita.
3. To establish the linkage of these Vayus with the Autonomic Nervous System, Brainstem Reflexes, and the Enteric Functions.

MATERIALS AND METHODS

A review was made from the Ayurveda Samhitas and their commentaries, Ayurvedic references, medical science books, and data from articles, journals, periodicals, and other published sources and web pages for fulfilling the objectives of the present investigation. In this review article, certain literary works were retrieved from the old literatures of Ayurveda including Charaka Samhita, Sushruta Samhita, Ashtanga Hridaya, and Sharangdhara

Samhita, along with Hatha Yoga literatures including Gheranda Samhita and Shiva Samhita. Old literatures were explored for discovering the distinct functions of the Dasha Vidha Vata. On the other hand, the medical literature including the standard book of human physiology (Guyton & Hall's textbook) and medical literatures such as searching facilities of PubMed and Google Scholar sites were explored for establishing the functional connections. Internet search was conducted by using the following keywords; Physiology of Sneezing, Yawning Reflex, Enteric Nervous System, and Vagus Nerve.

REVIEW OF LITERATURE

A. The Pancha Maha Prana (Systemic Regulators)

1. Prana Vayu: The Neuro-Respiratory Governor

Prana Vayu is known to be the most significant of the five and is also considered to be the life force itself.

- **Classical Physiology:** It is present in the Murdha (Head), Urah (Chest), and Kantha (Throat). The Gheranda Samhita explicitly states the heart as its eternal seat (*Hṛdi prāṇo vahen nityam*)⁶. It governs Buddhi (Intellect), Hridaya (Heart), Indriya (Senses), and Chitta (Mind). Functions include Shtivana (Spitting), Kshavathu (Sneezing), Udgara (Belching), Nishwasa (Inspiration), and Anna Pravesha (Deglutition).^[3]
- **Modern Correlation:** The functions of Prana Vayu are associated with the Brainstem (Medulla/Pons) and the Cranial Nerves. The control of Nishwasa (Inspiration) is associated with the Dorsal Respiratory Group (DRG) in the medulla. The control of Hridaya shows Vagal Tone (Parasympathetic outflow), which controls heart rate.^[8]

2. Udana Vayu: The Energy of Expression and Phonation

Udana Vayu is the upward-moving energy, which counteracts the force of gravity.

- **Classical Physiology:** Its seat is in the Urah (Chest), passing through Nasa (Nose), Nabhi (Umbilicus), and Gala (Throat). In both Gheranda and Shiva Samhita, its primary seat is identified in the throat region (*Udānaḥ kaṅṭha-madhya-gaḥ*).^[6,7] It is associated with Vak Pravritti (Speech Production), Prayatna (Effort), Urja (Energy), Smriti (Memory), and Varna (Complexion).^[9]
- **Modern Correlation:** Udana is equivalent to the neuromuscular coordination of Phonation and Speech. The passage of air through the larynx to produce vocal cord vibrations corresponds to the course of Udana. Neurological pathways include the Broca's Area (Motor Speech) and the Recurrent Laryngeal Nerve.^[10]

3. Samana Vayu: The Enteric Nervous System

Samana Vayu is the balancing force that acts centrally.

- **Classical Physiology:** It is situated close to the Agni (Digestive Fire) in the Koshta. Gheranda Samhita locates it specifically at the navel (*Samāno nābhi-deśe*)⁶. Functions include Anna Grahana (Food Retention), Pachana (Digestion), Vivechana (Separation of Nutrients/Wastes), and Munchana (Waste Propulsion).^[11]
- **Modern Correlation:** Samana Vayu is similar to the Enteric Nervous System (ENS). The "holding" of food (Anna Grahana) is associated with Gastric Accommodation and pyloric sphincter tone. The separation of nutrients (Vivechana) is associated with selective absorption by intestinal villi and the Migrating Motor Complex (MMC) that propels waste, regulated by the Myenteric plexus.^[12]⁴

4. Vyana Vayu: The Circulatory and Motor Coordinator

Vyana Vayu pervades the whole body (Sarva Sharira Gata).

- **Classical Physiology:** It moves with very high speed (Mahajava). According to Gheranda Samhita, it pervades the entire physical structure (*Vyāno vyāpya śarīre*)⁶. It is responsible for Rasa-Rakta Samvahana (circulation), Gati (locomotion), Apakshepana (flexion), Utkshepana (extension), and Nimesha–Unmesha (blinking).^[13]
- **Modern Correlation:** Vyana is responsible for the Cardiovascular System (Cardiac Output and arterial flow) and the Somatic Motor System. The fast transmission of nerve impulses and the pumping action of the heart to supply tissues are the special attributes of Vyana. It also controls Autonomic Vasomotor tone (dilation/constriction) for thermoregulation.^[14]

5. Apana Vayu: The Pelvic and Excretory Governor

Apana Vayu is the downward-moving force.

- **Classical Physiology:** It resides in the Pakvashaya (colon), Basti (bladder), and Guda (rectum). Shiva Samhita and Gheranda Samhita locate its seat at the anus (*Apāno guda-maṇḍale*)^{6,7}. It controls the elimination of Shakrut (feces), Mutra (urine), Shukra (semen), Artava (menses), and Garbha (fetus).^[15]
- **Modern Correlation:** Apana is associated with the regulation of the Sacral Spinal Reflexes (S2–S4) related to micturition and defecation. It controls the transition from sympathetic storage (holding) to parasympathetic voiding (expulsion). In the reproductive system, it controls the Ferguson Reflex of childbirth and the muscular contractions of

ejaculation.^[16]

B. The Pancha Upa Prana (The Physiology of Reflexes)

Maha Pranas regulate the functions, while Upa Pranas regulate the reflexes. These are explained in the Sharangdhara, Gheranda, and Shiva Samhita.

1. Naga Vayu: The Reflex of Eructation (Belching)

- **Classical Physiology:** "Naga performs Udgara (belching)[5]. Gheranda Samhita {5/64} confirms: *Udgāre nāga ākhyātaḥ*^[6]. It relieves pressure in the stomach.
- **Modern Correlation:** This is related to the Transient Lower Esophageal Sphincter Relaxation (TLESR). Gastric distension triggers a vagal afferent response to the brainstem to relax the LES, allowing gas to escape. Inhibition of this Naga force is related to Roemheld Syndrome.^[17]

2. Kurma Vayu: The Reflex of Blinking

- **Classical Physiology:** "Kurma performs Unmesha–Nimesha (opening and closing of eyelids).^[5] Gheranda Samhita describes its role in eye-opening as *Kūrmās tunmīlane smṛtaḥ*.^[6] It protects the eye.
- **Modern Correlation:** This is the Corneal Reflex and Spontaneous Blinking. It is mediated by the Trigeminal (V) and Facial (VII) nerves.^[18]

3. Krikara Vayu: The Reflex of Sneezing and Hunger

- **Classical Physiology:** "Krikara causes Kshavathu (sneezing) and creates hunger".^[5] Gheranda Samhita notes it is responsible for both hunger and thirst (*Kṛkaraḥ kṣut-tṛṣṇe*).^[6]
- **Modern Correlation:** This is the Sneeze Reflex. Irritation of the nasal mucosa triggers the Trigeminal nerve, sending signals to the "sneeze center" in the lateral medulla.^[19]

4. Devadatta Vayu: The Reflex of Yawning

- **Classical Physiology:** "Devadatta causes Jrumbha (yawning).^[5,6] It is the modification of Prana responsible for gaping (*Vijrumbhaṇe*).^[6]
- **Modern Correlation:** Yawning is a thermoregulatory reflex to cool the brain and increase alertness. It is controlled centrally by the Paraventricular Nucleus (PVN) of the hypothalamus.^[20]

5. Dhananjaya Vayu: Cellular Integrity and Decomposition

- **Classical Physiology:** "Dhananjaya pervades the body, provides nourishment, and does

not leave even after death" (*Na jahāti mr̥te kvāpi*).^[5,6] Interestingly, the Shiva Samhita also associates its modification with the function of hiccups.^[7]

- **Modern Correlation:** In the living, it maintains Cellular Tone. In death, the cessation of ATP pump function leads to calcium entry, causing Rigor Mortis, followed by cellular breakdown and gas formation (decomposition). This "swelling" in death is the defining characteristic of Dhananjaya.^[21]

OBSERVATIONS

Table 1: The Dasha Vidha Vata and Physiological Correlations

Vata Type	Sub-Type	Classical Location (Sthana)	Primary Function (Karma)	Modern Physiological Correlation
Prana	Maha	Murdha, Urah, Heart	Respiration, Swallowing	Brainstem (DRG), Vagus Nerve
Udana	Maha	Urah, Throat	Speech, Phonation	Broca's Area, Recurrent Laryngeal Nerve
Samana	Maha	Koshta, Navel Region	Digestion, Assimilation	Enteric Nervous System (ENS), MMC
Vyana	Maha	Hridaya, Whole Body	Circulation, Locomotion	Cardiac Output, Somatic Motor System
Apana	Maha	Pakvashaya, Anus	Excretion, Reproduction	Pelvic Splanchnic Nerves (S2-S4)
Naga	Upa	Stomach, Throat	Eructation (Burping)	TLESR, Vago-vagal Reflex
Kurma	Upa	Eyes (Netra)	Blinking (Unmesha)	Corneal Reflex (CN V & VII)
Krikara	Upa	Nose/Throat	Sneezing, Hunger	Sneeze Reflex, Hypothalamic Nuclei
Devadatta	Upa	Mouth/Throat	Yawning	Hypothalamic PVN, Thermoregulation
Dhananjaya	Upa	Whole Body (Sarvaga)	Cellular Tone, Hiccups	ATP pumps, Rigor Mortis, Oncosis

DISCUSSION

The Tridosha system, and more specifically the sub-classification of Vata, offers a wide-ranging system of knowledge about human physiology. Prana Vata can be generalized as "breath," while the Dasha Vidha Vata sub-classification differentiates between the voluntary process of breathing (Prana/Udana) and the involuntary protective mechanisms (Krikara/Naga). The integration of Gheranda and Shiva Samhita references clarifies the seats of these energies, such as the heart being the master center for Prana.^[6,7]

The literature review reveals an impressive similarity between the Dasha Vidha Vata sub-classification and the functional classification of the nervous system. The Maha Pranas match very well with the Autonomic Nervous System's systemic divisions, while the Upa Pranas

match well with specific brainstem and hypothalamic reflexes. This difference is of immense clinical importance. The patient with Udgara Bahulya has an imbalanced Naga Vayu. The patient with Blepharospasm has Kurma Vayu pathology.

CONCLUSION

The Dasha Vidha Vata brings together a complete design of the human neuro-physiological system. The integration of these ideas with the science domain confirms the authenticity of the ancient texts like the Gheranda and Shiva Samhita and reveals a completely new area within the concept of Integrative Diagnostics. A complete examination of the ten Vayus will turn the entire Ayurvedic system from the concept of "Vata imbalances" to the area of precision medicine.

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