



## CORRELATION OF VATA DOSHA W.R.T. GUT MICROBIOTA: A REVIEW

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**ABSTRACT**

Ayurveda is a life science which mentions in the oldest scripture of Hinduism. According to Ayurveda health is the equilibrium between three doshas i.e., *Vata*, *Pitta*, and *Kapha*. *Vata* dosha plays an important role in the maintenance of health. *Pitta* and *Kapha* doshas depend on *Vata* dosha for their movement. In all diseases, there is the involvement of *Vata* dosha directly or indirectly. Basti therapy is the main treatment for *Vata dosha* therefore it is called complete treatment in Ayurveda.

As in medical science, the gut-brain axis is bidirectional biochemical signaling that takes place between the gastrointestinal tract system and the central nervous system. Recent research on the gut-brain axis shows its importance of it. It influences nearly all body systems and activities. The heart of the gut-brain axis is gut microbiota. Normal gut microbiota is a reason for health while dysbiosis is a reason for all types of diseases.

**Keywords:** *Vata dosha*, gut microbiota, gut-brain-axis.

**INTRODUCTION**

*Ayurveda* is a life science and is based on the principle of the oldest scriptures of Hinduism i.e., *Vedas*. The central theoretical ideas of *Ayurveda* show parallels with *samkhya* and *vaisheshika* philosophies<sup>1</sup>. This is a reason why there is a gap between science

and *Ayurveda*<sup>2</sup>. Though there is a lack of scientific soundness in the theoretical foundation of *Ayurveda* practically it is more effective. With the help of some empirical evidence, much recent research proved that

*Ayurveda* principles closely correspond to many concepts of contemporary science.

According to *Ayurveda*, the human body is composed of *dosha* (humoral biomaterials), *dhatu*s (tissues), and *malas* (wastes)<sup>3</sup>. *Doshas* are three in number namely *vata*, *pitta*, and *kapha*<sup>4</sup>. *Dhatu*s are seven in numbers namely *rasa*, *rakta*, *mansa*, *meda*, *asthi*, *majja* and *shukra*. *Malas* are three in number namely *purisha*, *mutra*, and *sweda*<sup>5</sup>. In this article, we will discuss the mainstream of *Ayurveda*.

According to *Ayurveda*, normal *vata dosha* with its quality and quantity is a cause for the health of an individual while vitiated *vata dosha* is the cause of all illness<sup>6</sup>. *Vata dosha* is the main of the three *doshas*. *Pitta* and *kapha doshas* do not make illness themselves whenever there is the involvement of *vata dosha*. *Pitta*, *kapha*, seven *dhatu*s, and three *malas* cannot move, *vata* is the only *dosha* that moves on its own and gives movement and have a property to carry other *dosha*, *dhatu*s, and *malas* in the involvement of health and illness<sup>7</sup>. From other angle, *agnimandya* (loss of appetite) is the root cause of all diseases<sup>8</sup> while *Agnibala* (strength of appetite) depends on *saman vayu* which is one of five types of *vata dosha*<sup>9</sup>. Again, suppression and expression of natural urges are the cause of all diseases<sup>10</sup>, while suppression and expression of natural urges govern by *vata dosha*. *Vata dosha* not only alter physical health but also mental health. *Vata dosha* control and govern the activities of the mind. Changes in mood depend on *vata dosha*<sup>11</sup>. It also controls all sense organs, and memories and prompts all types of action. It is responsible for the formation of *dhatu*s by transferring and nourishing that *dhatu*. It is directly or indirectly responsible for body building and holding. It also controls speech. It is a cause of happiness and excitement. Detoxify the body by creating natural urges at their proper time. It also involves foetal development and so on. Ultimately life depends on *vata dosha* therefore *vata dosha* pronounce as *Bhagavana* i.e., God.<sup>12</sup> According to *Ayurveda*, every *dosha* has its main place in the body where it lives in its normal state. *Vata dosha* lives in *pakvashaya*<sup>13</sup> (large intestine i.e., colon) and works in the whole body. As we discuss

earlier normal *vata dosha* is responsible for health and vitiated *vata dosha* is responsible for the illness. To control vitiated *vata dosha* two types of treatment can be used, *shaman* (neutralizing toxins by medications) and *shodhan* (detoxification of the body by eliminating toxins)<sup>14</sup>. *Shodhana* therapy is better than *shamana* treatment as the disease has no recurrence when treated by *shodhana* therapy<sup>15</sup>. The best *shamana dravya* for *vata dosha* is oil and the best *shodhana* therapy for *vata dosha* is *basti* (therapeutic enema)<sup>16</sup>. Mainly *basti* is of two types- *anuvasana* and *asthapana*. *Anuvasana basti* is a therapeutic enema of medicated oil as per disease while *asthapana basti* is a therapeutic enema of decoction of different herbs as per disease. *Basti* is the only *panchakarma* therapy that is given from birth to any age. The quantity of *bastidravya* varies according to age, disease, and body structure mentioned in *Ayurveda*.

*Basti* detoxifies the whole body by removing waste from the colon such as cotton removing the colour from the coloured water of *kusumb dravya*<sup>17</sup>. *Basti* cures all three types of diseases by its opponent's action on vitiated *vata dosha*, therefore, some *acharya* called it half and some *acharya* called it complete treatment.<sup>18</sup>

#### **Modern medical science research:**

*Ayurveda* gives more importance to the gastrointestinal system in corresponding with health and illness. Modern medical science is on the pathway of it, as new research on the gut-brain-axis (GBA) makes revolutionary changes in medical science. Gut-brain-axis is a bidirectional biochemical signalling that takes place between the gastro-intestinal tract system and central nervous system<sup>19</sup>. Gut-brain-axis influence the central nervous system, neuroendocrine system, neuroimmune system, the hypothalamic-pituitary-adrenal system (HPA), sympathetic and parasympathetic arms of the autonomic nervous system, the enteric nervous system, vagus nerve, and gut microbiota<sup>20</sup>. Gut-brain-axis is also referred to as the microbiota-gut-brain (MGB) axis due to the role of gut microbiota in the biochemical signalling events that take place between the gastro-intestinal system and central nervous system. Gut microbiota is noth-

ing but the colonization of different bacteria in the human gut which live symbiotically. The microbial composition of gut microbiota varies across regions of the digestive tract. The colon contains the highest microbial density recorded in any habitat on earth<sup>21</sup>. As we see early, the colon is the main place of *vata dosha* where it lives and control body functions.

More research suggests that the gut micro-organism influences the function of the brain by releasing the chemicals such as cytokines, neurotransmitters, neuropeptides, chemokines, endocrine messengers, and microbial metabolites such as short-chain fatty acids, branched-chain fatty acids, and peptidoglycans<sup>22</sup>. The intestinal microbiome can then divert these products to the brain via the blood, neuropod cells, nerves, endocrine cells, and more to be determined<sup>23</sup>. Studies have confirmed communication between the hippocampus, the prefrontal cortex, and the amygdale (responsible for emotions and motivation) which acts as a key node in the gut brain behavioural axis<sup>24</sup>.

The gut microbiota can produce a range of neuroactive molecules, such as acetylcholine, dopamine, catecholamine,  $\gamma$ -aminobutyric acid, histamine, melatonin, and serotonin which are essential for regulating peristalsis and sensation of the gut and many more. More than 90% of the body's serotonin lies in the gut as well as about 50% of the body's dopamine. Changes in the composition of gut microbiota due to diet, drugs, or disease correlate with changes in the levels of circulating cytokines some of which can affect brain function. The gut microbiota also releases molecules that can directly activate the vagus nerve which transmits information about the state of the intestines to the brain. The gut is sometimes referred to as the "second brain"<sup>25</sup>.

Likewise, chronic, or acutely stressful situations activate the HPA axis causing changes in the gut microbiota and intestinal epithelium and possibly having systemic effects. The cholinergic anti-inflammatory pathway signalling through the vagus nerve affects the gut epithelium and microbiota. Hunger and satiety are integrated into the brain and the presence or absence of food also affects the composition and activity of gut microbiota<sup>25</sup>.

Bacteria in the human gut are the most diverse in the human body and play a vital role in human health. The consumer's dietary habits can be one of the most influential factors for the dysbiosis of gut microbiota<sup>26</sup> resulting in changes in their functional composition and metabolic activities or a shift in their local distribution. Typical microbial colonies found on or in the body are benign or beneficial. These appropriately sized microbial colonies carry out a series of helpful and necessary functions, such as aiding in digestion<sup>27</sup>. They also help protect the body from infiltration by pathogenic microbes. These beneficial microbial colonies compete with each other for space and resources<sup>28</sup>. However, when this balance is disturbed, these colonies exhibit a decreased ability to check each other's growth, which can then lead to the overgrowth of one or more of the disturbed colonies which may further damage some of the other smaller beneficial ones in a vicious cycle. As more beneficial colonies are damaged, making the imbalance more pronounced, more overgrowth issues occur because the damaged colonies are less able to check the growth of the overgrowing ones. If this goes unchecked long enough, a pervasive and chronic imbalance between colonies will set in, which ultimately minimizes the beneficial nature of these colonies as a whole. Microbial colonies also excrete many different types of waste by-products. Using different waste removal mechanisms, under normal circumstances, the body effectively manages these by-products with little or no trouble. Unfortunately, oversized and inappropriately large colonies, due to their increased numbers, excrete an increased amount of these by-products. As the number of microbial by-products increases, the higher waste by-product levels can overburden the body's waste removal mechanism<sup>29</sup>.

## DISCUSSION

*Ayurveda* says the colon is the site of *vata dosha* while modern medical science says the colon is the main site of the gut microbiome. According to *Ayurveda* *vata dosha* is the reason for health and vitiated *vata dosha* is the cause of all diseases while modern medical science says gut microbiota plays a vital role

in health and dysbiosis of gut microbiota causes systemic changes and thus nearly all diseases. In modern medical science, there is no proper treatment mentioned for dysbiosis of gut microbiota while in *Ayurveda* various types of *basti* therapy are mentioned for vitiated *vata dosha*. From all this review we can say that gut microbiota is akin to *vata dosha*.

## CONCLUSION

From the above discussion, we can say that *vata dosha* in *Ayurveda* and gut microbiota mentioned in modern medical science have a similar location, and functions and is the reason for health and disease. Needs further experimental studies, animal models, and clinical analyses to generate evidence for this correlation, which will prove helpful later for the therapeutic concern. Complete health can be claimed due to normal *vata dosha* with respect to gut microbiota.

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