



A COMPREHENSIVE REVIEW ON EFFECTS OF AHARA ON BUDDHI BASED ON GURUVADI GUNAS

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ABSTRACT

Ahara (diet) is considered one of the three Upastambhas of life in Ayurveda and plays a vital role in maintaining physical, mental, and intellectual well-being. Buddhi (intellect) is influenced by the qualities of food through their effects on Doshas and Manasika Gunas. The twenty Guruvadi Gunas described in Ayurveda represent the fundamental attributes of dietary substances and determine their impact on cognitive and psychological functions. This review aims to analyze the effects of Ahara on Buddhi based on Guruvadi Gunas and explore their possible correlation with modern neurophysiological concepts. Various Gunas such as Laghu, Tikshna, Sara, Sukshma, and Vishada are associated with enhanced alertness, analytical thinking, adaptability, and mental clarity, whereas Guru, Manda, and excessive Sthula or Picchila Gunas may contribute to mental dullness and reduced cognitive efficiency. Snigdha, Sthira, Sandra, and Mridu Gunas support memory retention, emotional stability, concentration, and mental resilience. These effects may be understood through mechanisms involving neurotransmitter activity, cerebral blood flow, neuroplasticity, autonomic regulation, and neuroinflammation. The review highlights the relevance of Guruvadi Gunas as an Ayurvedic framework for understanding the influence of dietary qualities on cognitive health and intellectual functioning.

KEYWORDS: Ahara, Buddhi, Guruvadi Guna, Ayurveda, Medha, Cognitive Function, Neurophysiology, Manovaha Srotas, Diet, Mental Health.

INTRODUCTION

Ayurveda, the ancient science of life, emphasizes the maintenance of health through a balanced interaction between Ahara (diet), Vihara (lifestyle), and Aushadha (medicines). Among these, Ahara occupies a central position and is regarded as one of the three Upastambhas (supporting pillars of life). Classical Ayurvedic texts state that the quality, quantity, and properties of food directly influence both physical and psychological well-being. The famous dictum "Ahara Sambhavam Vastu" highlights that all bodily tissues, strength, complexion, vitality, and mental faculties are dependent upon food.

Buddhi, one of the important faculties of the mind, refers to the power of intellect, discrimination, reasoning, decision-making, and comprehension. Proper functioning of Buddhi is essential for learning, memory, judgment, and overall cognitive performance. Ayurveda explains that the state of Buddhi is influenced by the balance of Doshas, the predominance of Sattva, Rajas, and Tamas Gunas, and the quality of Ahara consumed. Therefore, dietary substances not only nourish the body but also exert profound effects on mental and intellectual functions.

The pharmacodynamic and physiological actions of food substances in Ayurveda are largely determined by their inherent qualities or Gunas. Among the twenty fundamental Guruvadi Gunas described in Ayurvedic literature—Guru, Laghu, Manda, Tikshna, Sheeta, Ushna, Snigdha, Ruksha, Slakshna, Khara, Sandra, Drava, Mridu, Kathina, Sthira, Sara, Sukshma, Sthula, Vishada, and Picchila—each possesses specific effects on the body and mind. These qualities influence Dosha equilibrium, mental attributes, emotional responses, and cognitive abilities. Certain Gunas promote clarity,

concentration, memory, and intellectual sharpness, whereas others may induce mental dullness, lethargy, instability, or emotional imbalance when present in excess.

In recent years, growing interest has emerged in understanding traditional Ayurvedic concepts through the lens of modern biomedical sciences. Advances in neuroscience, neurochemistry, neuroplasticity, cerebral circulation, and brain-gut interactions have provided new insights into the relationship between dietary factors and cognitive functions. Many of the effects attributed to Guruvadi Gunas may be interpreted through mechanisms involving neurotransmitter regulation, autonomic nervous system activity, inflammatory pathways, blood-brain barrier permeability, myelination, and neuronal metabolism.

The present review aims to comprehensively analyze the effects of Ahara on Buddhi based on the concept of Guruvadi Gunas and to explore their possible neurophysiological correlations. By integrating classical Ayurvedic wisdom with contemporary scientific understanding, this review seeks to provide a broader perspective on the role of dietary qualities in maintaining cognitive health, mental stability, and intellectual excellence.

AIMS

- To study the concept of Buddhi and its importance in Ayurveda.
- To analyze the influence of each of the twenty Guruvadi Gunas on cognitive functions, memory, concentration, decision-making, and mental behavior.



MATERIALS AND METHODS

- Classical Ayurvedic texts such as Charaka Samhita, Sushruta Samhita, Ashtanga Hridaya, and other authoritative Ayurvedic literatures describing Ahara, Buddhi, Manas, Doshas, and Guruvadi Gunas has been referred.
- A comprehensive literature search was conducted using standard textbooks of Ayurveda and electronic databases such as PubMed, Google Scholar, Scopus, and ResearchGate.

REVIEW OF LITERATURE

EFFECTS OF AHARA ON BUDDHI BASED ON GURUVADI GUNAS

1. Guru Guna

- Increases Kapha and Tamas, dulls the intellect, slows cognitive processing, and induces mental lethargy or brain fog.
- Examples : Heavy cheeses, red meat.
- Applied Physiology : These substances typically have a high glycemic load (e.g., complex, long-chain fats, processed proteins) and these require significant energy for digestion. So because of this, these foods can cause a sharp rise in post-prandial insulin. In the brain, this can trigger a release of serotonin and melatonin, leading to "post-prandial somnolence" (the "food coma"), which physiologically dampens cognitive alertness and executive function.

2. Laghu Guna

- Increases Vata, Sattva, and Rajas.
- Sharpens the intellect, increases alertness, and improves grasping power.
- However, excess can cause anxiety or a scattered mind.
- Examples : Green gram
- Applied Physiology : These are the food substances which can be easily absorbed, and often contain bioactive compounds that stimulate the central nervous system. These stimulate the release of catecholamines (dopamine, norepinephrine) and these can increase the cerebral blood flow. They optimize the Adenosine Triphosphate (ATP) cycle, providing the sharpness needed for quick cognitive processing.

3. Manda Guna

- Increases Kapha.
- Calms a hyperactive mind but slows down active decision-making.
- Good for reducing mental stress, but counterproductive for acute focus.
- Examples : Overripe bananas.
- Applied Physiology : Similar to Guru Guna, These substances typically have a high glycemic load (e.g., complex, long-chain fats, processed proteins) and these require significant energy for digestion. So because of this, these foods can cause a sharp rise in post-prandial insulin. In the brain, this can trigger a release of serotonin and melatonin, leading to "post-prandial somnolence" (the "food coma"), which physiologically dampens cognitive alertness and executive function.

4. Tikshna Guna

- Increases Pitta and Rajas.
- Enhances brilliant intellect (Medha) and quick decision-making due to its penetrating nature.
- Excess leads to impatience, anger, and irritability.
- Examples : Black pepper, raw garlic.
- Applied Physiology : Similar to Laghu Guna, These are the food substances which can be easily absorbed, and often contain bioactive compounds that stimulate the central nervous system. These stimulate the release of catecholamines (dopamine, norepinephrine) and these can increase the cerebral blood flow. They optimize the Adenosine Triphosphate (ATP) cycle, providing the sharpness needed for quick cognitive processing.

5. Sheeta Guna

- Increases Kapha and Vata, pacifies Pitta.
- Cools emotional turbulence, promotes mental stability, and reduces anger.
- Excess causes emotional detachment.
- Examples : Sugarcane juice, cucumber.
- Applied Physiology : This refers to cooling/anti-inflammatory properties. These foods modulate systemic inflammation and cortisol levels. By cooling the inflammatory response, they protect the brain from excitotoxicity (damage caused by over-activation of neurons).

6. Ushna Guna

- Increases Pitta and Rajas.
- Stimulates passion and clears psychological blockages.
- Excess causes mental burnout and aggression.
- Examples : Cinnamon, ginger.
- Applied Physiology : This correlates with vasodilatory and metabolic-boosting foods (e.g., spices like piperine). These trigger "hormesis"—A low-dose stress response that upregulates Brain-Derived Neurotrophic Factor (BDNF). This promotes the growth of new neurons. However, if Ushna is excessive, it induces chronic oxidative stress (ROS) and neuroinflammation, which damages the hippocampus, the seat of memory.

7. Snigdha Guna

- Increases Kapha and Sattva.
- Considered the absolute best quality for the intellect (Medhya) as it nourishes brain tissue, enhances memory retention (Smriti), and promotes emotional stability.
- Examples : Cow's ghee (supreme Medhya rasayana), almonds, fresh butter.
- Applied Physiology : This refers to lipids and high-quality fatty acids. The brain comprises of ~60% fat. Snigdha foods are essential for maintaining the neuronal phospholipid bilayer and the myelin sheath. Sufficient intake of these lipids allows for high-speed signal transduction (nerve impulse velocity) and supports neuroplasticity, which is the physical basis of memory (Smriti).

8. Ruksha Guna

- Increases Vata and Rajas.
- Promotes wakefulness.



- Excess causes memory loss, overthinking, and anxiety.
- Examples : Millets (Ragi)
- Applied physiology : These foods are typically low in lipids and high in complex fibers or astringents. An excess of Ruksha Guna (without corresponding hydration or lipid intake) may lead to systemic dehydration. Dehydration is clinically proven to reduce brain volume and impair executive function, making it difficult for the Buddhi to maintain focus.

9. Slakshana guna

- Increases Kapha and Sattva.
- Promotes a gentle, accommodating, and loving mental framework as it smoothes over mental friction and irritability.
- Examples : Ripe sweet mangoes, milk.
- Applied Physiology : Slakshana foods (like fresh butter) promote gut health by maintaining the integrity of the mucosal lining. A smooth gut transit prevents the absorption of endotoxins (Lipopolysaccharides) into the bloodstream. These Lipopolysaccharides if it crosses the blood-brain barrier can cause neuroinflammation. Thus these foods help in reducing the inflammation in the neurons.

10. Khara guna

- Increases Vata and Rajas.
- Increases mental rigidity and harshness in thought, but also builds resilience.
- Excess leads to stubbornness.
- Examples : Bitter gourd (Karela)
- Applied Physiology : Rough foods are typically lower in essential lipids and water content. Rough food substances increases vata, stimulates the sympathetic nervous system to an excess, thereby creating a state of high neuronal jumpiness. It makes it difficult for the intellect to perceive a clear, sharp signal. In the cardiovascular system, Khara is associated with arterial stiffness (Increased vascular resistance). Rigid arteries impede blood flow to the brain, leading to Cerebral hypoperfusion.

11. Sandra Guna

- Increases Kapha.
- Provides psychological grounding and solidifies memory consolidation.
- It prevents racing thoughts.
- Examples : Root vegetables (like sweet potato).
- Applied Physiology : The Sandra quality specifically correlates to the brain's structural integrity. That is the density of Grey Matter (Neuronal Cell Bodies) and White Matter (Myelinated Axons). To maintain a sharp intellect, the brain requires sufficient high-density nutrients (lipids and proteins) to maintain the solid structure of the neuronal membrane. A person with appropriate Sandra quality in their physiology possesses a grounded intellect. That is one that is resilient, retains information well, and maintains the focus without becoming easily distracted

12. Drava Guna

- Increases Kapha and Pitta.

- Enhances mental fluidity, adaptability, and the free flow of emotions.
- Examples : Herbal teas.
- Applied Physiology : The most potent correlation for Drava Guna is the Glymphatic System. During sleep and rest, the brain utilizes cerebrospinal fluid (CSF) to "flush" out metabolic waste products, such as Beta-Amyloid and Tau Proteins, which accumulate during active cognitive work. Drava properties facilitate the circulation of CSF and Interstitial Fluid. The Drava quality correlates to cerebral hemodynamics. That is the velocity and volume of blood flow to the brain. Proper hydration and intake of "fluid-like" nutrients (Water-rich fruits) reduce blood viscosity. This ensures that oxygen and glucose reach every capillary in the cortex, thereby preventing mental fatigue and supporting high-speed processing

13. Mridu Guna

- Increases Pitta and Kapha.
- Cultivates compassion, flexibility, relaxed mental state and is excellent for de-escalating stress.
- Examples : Soft Kichadi, steamed vegetables, ripe papaya.
- Applied Physiology : The act of digesting soft foods facilitates the parasympathetic nervous system (the rest and digest state). When the body is not struggling to break down difficult, fibrous or hard structures, the brain is freed from the distraction of systemic digestive stress. This allows for higher cognitive efficiency and a shift away from the agitated mindset, Thereby promoting emotional flexibility, calm reasoning, and the ability to adapt to new situations. This prevents the Mental rigidity.

14. Kathina Guna

- Builds mental discipline, and endurance.
- Requires effort to process.
- Examples : Hard nuts, dry coconut.
- Applied Physiology : The act of chewing Kathina foods stimulates the Trigeminal nerve. Studies in neuro-physiology show that rhythmic mastication significantly increases blood flow to the Prefrontal Cortex (The area of the brain responsible for complex planning, decision-making, and executive function). The effort required to break down these foods can trigger the expression of Brain-Derived Neurotrophic Factor (BDNF), a protein that promotes the growth and survival of neurons.

15. Sthira Guna

- Increases Kapha.
- Anchors a wandering mind.
- Essential for deep concentration (Dharana) and long-term memory retention.
- Examples : Whole wheat, Ashwagandha.
- Applied Physiology : This aligns with GABAergic (Inhibitory) tone and Parasympathetic Nervous System (PNS) dominance. When the brain enters this state, It suppresses background noise (Irrelevant sensory inputs) and consolidates synaptic connections. Sthira Guna helps to stabilize the Hypothalamic-Pituitary-Adrenal (HPA) axis, thereby reducing the "Fight-or-Flight" responses that causes mental fragmentation.



16. Sara Guna

- Increases Vata.
- Stimulates curiosity and quick thinking.
- Excess leads to scattered thoughts and lack of focus.
- Examples : Castor oil, green tea.
- Applied Physiology : This correlates with Catecholaminergic tone (Dopamine and Norepinephrine activity) and Sympathetic Nervous System activation. It is the physiological state of "Task-switching" and rapid signal propagation across the neural network. It allows the Buddhi to adapt to new environments, make quick inferences, and shift direction between different cognitive tasks. Without Sara, the intellect becomes rigid and slow to adapt to changing circumstances.

17. Sukshma Guna

- Increases Vata and Pitta.
- Pierces deep into the Manovaha Srotas (channels of the mind).
- Expands consciousness, intuition, and highly analytical thinking.
- Examples : Honey, alcohol.
- Applied Physiology : Food molecules that are having Sukshma Guna are typically lipophilic or substances having lower molecular weight. This allows them to pass through the lipid bilayer of the Blood Brain Barrier via passive diffusion or through specific transport proteins. Since these substances reaches the neuronal environment quickly, they induce immediate changes in the mental state through facilitating of rapid synaptic transmission.

18. Sthula Guna

- Increases Kapha and Tamas.
- Can cause mental blockages if excessive.
- Examples : Jackfruit, heavy cheeses
- Applied Physiology : Sthula Guna foods provide the macro-nutrients required to maintain the brain's physical volume (e.g., Myelin sheaths, Glial cells, Neuronal membranes). The brain requires constant structural maintenance. Sthula foods provide the " Bricks and Mortar." They promote mental grounding, long-term memory consolidation, and deep concentration (Dharana).

19. Vishada Guna

- Increases Vata and removes mental fog and stagnation thereby promoting absolute clarity of thought, objectivity, and realization.
- Examples : Neem.
- Applied Physiology : Vishada foods typically possess Anti-inflammatory and Diuretic properties, which help to reduce the concentration of Pro-Inflammatory Cytokines in the brain. This allows for increase in neuronal firing. Thereby preventing the brain fog by promoting objectivity, mental sharpness, and the ability to distinguish truth from falsehood.

20. Picchila Guna

- Increases Kapha.
- Aids in cognitive cohesion—the ability to hold complex, multi-layered thoughts together.
- Excess causes mental sluggishness.

- Examples : Malabar spinach.
- Applied Physiology : The myelin that insulates axons is a fatty, lipid-rich substance that allows for high-speed signal conduction. Picchila Guna food substances provide the raw materials (Mucilaginous fibers, Phospholipids) that support the structural integrity of these membranes.

DISCUSSION

Ayurveda recognizes Ahara as a primary determinant of both physical and mental health. The present review demonstrates that the influence of food on Buddhi (intellect) can be understood through the framework of Guruvadi Gunas, which describe the inherent qualities of dietary substances. These qualities affect not only the Doshas but also the mental attributes governed by Sattva, Rajas, and Tamas, thereby influencing cognition, memory, emotional stability, decision-making, and overall intellectual performance.

Among the twenty Guruvadi Gunas, Laghu, Tikshna, Sara, Sukshma, and Vishada Gunas appear to enhance cognitive efficiency by promoting alertness, mental clarity, adaptability, and rapid information processing. From a modern neurophysiological perspective, these effects may be associated with increased catecholaminergic activity, improved cerebral blood flow, enhanced neuronal communication, and reduction of neuroinflammation. Such mechanisms facilitate attention, executive function, and cognitive flexibility, which are essential components of Buddhi.

Conversely, Guru, Manda, and excessive Sthula or Picchila Gunas tend to increase Kapha and Tamas, resulting in mental heaviness, sluggishness, and reduced cognitive alertness. The classical description of mental dullness produced by these Gunas closely resembles the phenomenon of post-prandial somnolence observed after consumption of heavy meals. Increased insulin secretion, alterations in neurotransmitter balance, and diversion of metabolic resources toward digestion may contribute to reduced alertness and slower cognitive processing.

The review also highlights the importance of Snigdha Guna in maintaining intellectual functions. Ayurveda considers Snigdha substances, particularly Ghrita (ghee), as Medhya (intellect-promoting). Modern neuroscience supports the importance of healthy lipids in maintaining neuronal membrane integrity, myelination, synaptic plasticity, and efficient signal transmission. These structural and functional roles provide a plausible explanation for the classical Ayurvedic observation that Snigdha Ahara enhances memory retention and intellectual capacity.

Similarly, Sthira and Sandra Gunas contribute to mental stability, concentration, and long-term memory formation. These qualities may correlate with neurophysiological processes involved in synaptic consolidation, autonomic balance, and maintenance of neuronal architecture. A stable neural environment allows efficient storage and retrieval of information, which is essential for higher cognitive functions.

Sheeta and Mridu Gunas demonstrate the significance of emotional regulation in intellectual performance. Ayurveda emphasizes that an agitated mind cannot utilize Buddhi effectively. By reducing excessive Pitta and stress-related responses, these Gunas help maintain emotional equilibrium. Contemporary research also indicates that chronic stress, neuroinflammation, and excessive cortisol secretion negatively



affect memory, attention, and decision-making. Thus, the calming properties attributed to these Gunas may indirectly support cognitive health.

The role of Drava Guna is particularly noteworthy in the context of hydration and cerebral physiology. Adequate fluid balance is essential for maintaining cerebral blood flow, nutrient transport, and glymphatic clearance of metabolic waste products. This concept closely parallels the Ayurvedic description of Drava Guna facilitating the smooth flow of physiological processes and supporting mental adaptability.

The analysis further suggests that intellectual health is not dependent upon a single dietary quality but rather on the harmonious balance of multiple Gunas. Excessive predominance of any one Guna may disturb cognitive equilibrium. For example, while Tikshna and Sara Gunas enhance mental sharpness, their excess may lead to anxiety, impatience, and mental restlessness. Likewise, Guru and Snigdha Gunas provide nourishment and stability but may impair alertness when consumed excessively. This observation reflects the Ayurvedic principle that health is achieved through balance rather than extremes.

An important contribution of this review is the attempt to bridge classical Ayurvedic principles with contemporary neuroscientific concepts. Although many of the proposed correlations appear biologically plausible, most remain theoretical and require scientific validation. Future experimental studies, neurocognitive assessments, and clinical trials are needed to evaluate the specific effects of foods possessing distinct Guruvadi Gunas on cognitive performance, memory, attention, emotional regulation, and brain physiology.

Overall, the findings suggest that the Ayurvedic concept of Guruvadi Gunas offers a unique and holistic framework for understanding the relationship between diet and intellect. Integrating these traditional insights with modern neuroscience may contribute to the development of personalized dietary strategies aimed at promoting cognitive health, mental well-being, and optimal intellectual functioning.

CONCLUSION

Ahara plays a pivotal role in influencing Buddhi through its inherent Guruvadi Gunas. The twenty Guruvadi Gunas described in Ayurveda provide a systematic framework for understanding how dietary qualities affect cognition, memory, emotional stability, concentration, decision-making, and overall mental functioning. Gunas such as Laghu, Tikshna, Sara, Sukshma, and Vishada promote intellectual sharpness and mental clarity, whereas Snigdha, Sthira, Sandra, and Mridu support memory retention, emotional balance, and cognitive stability. Conversely, excessive Guru, Manda, Sthula, and Picchila qualities may contribute to mental sluggishness and reduced alertness.

The review further suggests that many classical Ayurvedic descriptions may be interpreted through modern neurophysiological concepts including neurotransmitter regulation, neuroplasticity, cerebral blood flow, blood-brain barrier permeability, myelination, glymphatic clearance, and autonomic nervous system modulation. Although these correlations remain largely theoretical, they provide a promising foundation for interdisciplinary research. Thus, the Guruvadi Guna-based understanding of Ahara offers a holistic and personalized approach to maintaining cognitive health and

optimizing intellectual performance. Integrating Ayurvedic dietary principles with contemporary neuroscience may contribute significantly to future preventive and therapeutic strategies for cognitive well-being.

The present review opens avenues for further scientific exploration of the relationship between Ahara, Guruvadi Gunas, and cognitive functions. Future studies may focus on some of the theories. Clinical evaluation of the effects of foods possessing specific Guruvadi Gunas on memory, attention, concentration, and decision-making abilities. Neurocognitive and neuroimaging studies to investigate the influence of different dietary qualities on brain structure and function. Experimental research correlating Ayurvedic Gunas with neurotransmitter activity, neuroplasticity, inflammatory markers, and cerebral hemodynamics. Development of Guna-based personalized dietary guidelines for students, professionals, elderly individuals, and patients with cognitive disorders. Exploration of the role of Guruvadi Gunas in the prevention and management of neurodegenerative disorders, stress-related conditions, and cognitive decline. Integration of Ayurvedic nutritional principles with modern dietary neuroscience to establish evidence-based recommendations for enhancing intellectual health and mental well-being.

Such studies may help validate classical Ayurvedic concepts and strengthen their applicability in contemporary healthcare and cognitive science.

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