



# Conceptual Insight on Maintaining Oral- Brain axis Through Ayurveda Intervention

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## ABSTRACT

**Introduction:** Oral health and cognitive health are intricately connected. The health of our teeth, gums, and oral cavity have a direct influence on the health of our brain. The brain and oral connection are quite profound emerging evidence suggests a significant link between the oral microbiome and neuropsychiatric disorders, including depression

**Methods and Materials:** A literature review was collected using databases, to examining the connection between oral microbiota and depression. So, when we have poor oral care which eventually results in mental function disabilities like anxiety and depression. Studies states that the composition of the salivary microbiome like *Spirochaetaceae*, *Actinomyces* were found to be associated with severity of depressive and anxiety symptoms in adolescents. This indicates that oral microbes can travel up into the brain. Review in classics explains about the *Gandusha* and *Kavala* procedure which concentrate more on the oral health can be linked to evaluate the efficacy in modulating oral flora and improving mental health.

**Results:** *Gandusha* and *Kavala* is other form of drug administration into the oral cavity in which the active ingredients and chemical constituents of the drug are absorbed through the buccal mucosa and reach the blood stream.

**Discussion:** Studies that have looked at the brain of Alzheimer's patients during autopsies have actually found oral pathogens present in brain tissue. *Gandusha* and *Kavala* may serve as adjunctive tools in the prevention and management of depression by targeting upstream factors such as oral dysbiosis. Oral therapies not only support oral hygiene but may also reduce neuroinflammatory signals implicated in mood disorders via the oral-gut-brain axis.

**Conclusion:** The Oral Gut Brain Axis linked with *Gandusha* and *Kavala* procedure using offer promising, low-cost preventive strategies that support microbial balance and mental wellness.

**KEYWORDS:** depression, *gandusha*, *kavala*, oral microbiota

## INTRODUCTION

Oral health and mental health share a bidirectional relationship that extends far beyond the mouth. Increasing scientific evidence reveals that poor oral health may influence change mental wellness. Conditions such as dental caries, periodontitis and oral infections have been linked to systemic inflammation, immune

dysregulation, and neurochemical imbalances factors that may influence mood, cognition, and emotional stability<sup>1</sup>. Psychological disorders like depression, anxiety, and stress are frequently associated with neglect of oral hygiene and adverse health behaviors such as smoking, alcohol use and unhealthy diet. Conversely, chronic oral conditions can lead to pain, aesthetic concerns, halitosis, and social embarrassment, thereby diminishing self-esteem and contributing to social withdrawal, anxiety, and depressive symptoms. This creates a cyclical relationship where poor oral health and psychological distress reinforce each other<sup>2</sup>.

Emerging research also highlights the role of the oral microbiome in modulating the gut-brain axis a complex communication network linking the gastrointestinal tract and the central nervous system. Dysbiosis in the oral microbiota may contribute to systemic inflammation and neuroinflammation, further influencing mental health outcomes<sup>3</sup>.

## METHODS

Understanding the interconnections between oral and mental health underscores the necessity of adopting an integrated, interdisciplinary approach in healthcare. Promoting oral hygiene, stress management and routine dental care can therefore play a pivotal role not only in maintaining oral integrity but also in enhancing psychological resilience and overall quality of life. Several studies have shown that oral diseases can increase the risk of dementia, including up to increased risk of Alzheimer's disease<sup>4</sup>. Genetic analyses also support a potential causal link between poor oral health and changes in neuroimaging markers, many of which are known risk factors for stroke and dementia. Studies have found that bacteria and inflammatory molecules from the infected gums, teeth travels to the brain via the blood and trigger a cascade of events contributing to dementia and increasing amyloid protein levels in the brain.

Ayurveda explains about the regular maintenance of oral health by the *Dinacharya* procedure called *Gandusha* and *Kavala*<sup>5</sup>. In *Gandusha*, fill the liquid or oil in the mouth and there is no movement in your mouth and so your mouth is completely distended. It releases a lot of impurities and toxins, literally pulling them out. Toxins and impurities in the mouth may get lost in different parts of the body and create a stress on the immune system and that is the reason why oil pulling activates the immune system. *Kavala* is a process where you take the oil or liquid in your mouth and move it around. Both *Kavala* and *Gandusha* are done for maintaining both Physical and mental health.

## RESULTS AND DISCUSSION

The oral environment is a diverse and conducive ecosystem for the proliferation of several microbial groups due to its adequate temperature, humidity, and nutrients provided by the gingival crevicular fluid and salivary protein<sup>6</sup>, the major bacterial phyla in the oral cavity include members of *Actinomycetota*, *Bacteroidota*, *Fusobacteriota*, *Bacillota*, *Pseudomonadota*, and *Spirochaetota*<sup>7</sup>. Although oral archaea are regarded as non-pathogenic, some of them have been described in several oral diseases, including periodontitis and caries<sup>8</sup>, belonging to the species *Methanobrevibacter oralis*, *M.cuticularis*, *M.filiformi*, *M. ruminantium*, and *M. arboriphilius*. Some oral microbiome has a influence in acting on mental health.

## ROLE OF KAVALA GANDUSHA IN MENTAL HEALTH

The oral cavity which contains specialized epithelial cells, nerve endings, receptors all working together to help us perceive taste, speak clearly and process sensory input. When these pathways are inflamed, blocked or degenerated, we don't just lose taste or speech clarity which may also impact memory and cognition<sup>9</sup>. The drug which is taken by the mouth is passed through the liver and then absorbed into the bloodstream (systemic circulation). But in other forms of drug administration, the drug by-passes the liver and directly entering the

bloodstream and results in rapid onset of drug effect. *Gandusha* and *Kavala* is other form of drug administration into the oral cavity in which the active ingredients and chemical constituents of the drugs are absorbed through the buccal mucosa and reach the blood stream.

### THE PROBABLE MODE OF ACTION

**Exerts increased mechanical pressure:** *Gandusha* and *Kavala* increases mechanical pressure inside the oral cavity. The active ingredients and chemical constituents of the medicated liquid stimulate the chemoreceptors and mechanoreceptors in the mouth to send signals to salivary nuclei in the brain stem. As a result, the parasympathetic nervous system activity increases and impulses sent via motor fibers in facial and glossopharyngeal nerves. They trigger a dramatically increased output of salivary secretion which predominantly watery. The metabolic waste (toxins), food debris and depositions as well as superficial oral infective micro-organisms present in the oral cavity which leads to form plaque on brain tissue will gets dislodged and mixed with retained medicated liquid and removed from the oral cavity<sup>10</sup>.

**Stimulates salivary gland:** *Gandusha* and *Kavala* stimulates the salivary glands to secrete more saliva. Saliva contains a variety of host defense factors. The IgA, IgM antibodies and lysozyme (a bactericidal enzyme that inhibits bacterial growth in the mouth) present in the saliva provide protection against micro-organisms by acting as local antibiotic. Saliva also contains coagulation factors (factors VIII, IX & X) which protect wounds from bacterial invasion. Hence, *Gandusha* and *Kavala* increases the defense mechanism of the oral cavity and helps to regain overall health.

**Maintains oral pH:** The main function of salivary buffer is to maintain pH at the mucosal epithelial cell surface and the tooth surface. Healthy mouth is a non-acidic or neutral. Unhealthy mouth is acidic and increases the risk of oral diseases. *Gandusha* and *Kavala* is an immediate solution for mouth acidity and change the oral pH quickly into a safe zone<sup>11</sup>.

### COMMON AYUREVA DRUGS AND DRAVYA USED IN GANDUHA AND KAVALA

(TABLE 1)

| S.NO | DRUGS AND DRAVYA            | BENEFITS   |
|------|-----------------------------|--|
| 1    | <i>Usnodaka</i> (Hot Water) | <p><b>REDUCTION OF ORAL MICROBIAL LOAD</b><br/>Warm or hot water helps loosen food debris and disrupt bacterial biofilms on the teeth, gums, tongue, and oropharynx</p> <p><b>MODULATION OF THE ORAL–GUT–BRAIN AXIS</b><br/>The oral cavity is the gateway to the gut microbiome. Regular gargling may limit the swallowing of pathogenic bacteria and inflammatory by-products, thereby supporting gut microbial balance</p> <p><b>POTENTIAL COGNITIVE AND MENTAL HEALTH BENEFITS</b><br/>Hot water gargling may indirectly support cognitive clarity, mood regulation, and reduced risk of neurodegenerative and neuropsychiatric conditions linked to chronic inflammation.</p> |

|           |   |  |
|-----------|---|--|
| <p>2.</p> | <p><i>Triphala Kashaya</i></p>  | <p><b>ANTIMICROBIAL</b><br/> <b>EFFICACY AGAINST ORAL PATHOGENS</b><br/>                 Triphala shows significant antibacterial activity against <i>S. mutans</i> biofilm — the main bacterium involved in dental caries.</p> <p><b>ANTI-INFLAMMATORY ACTIVITY</b><br/>                 Inhibiting pro-inflammatory cytokines (TNF-<math>\alpha</math>, IL-1<math>\beta</math>, IL-6)<br/>                 Downregulating NF-<math>\kappa</math>B signaling<br/>                 Suppressing COX-2 expression.</p> <p><b>IMMUNOMODULATORY EFFECTS</b><br/>                 Improving macrophage and natural killer (NK) cell activity<br/>                 Balancing Th1/Th2 immune responses<br/>                 Regulating humoral and cell-mediated immunity.</p> <p><b>NEUROPROTECTIVE PROPERTIES</b><br/>                 Reduces neuronal oxidative damage<br/>                 Inhibits acetylcholinesterase activity<br/>                 Decreases amyloid-<math>\beta</math> aggregation<br/>                 Protects dopaminergic neurons</p> |
| <p>3.</p> | <p><i>Saindhava</i>      <i>Lavana</i><br/>                 contains minerals such as:</p> <ul style="list-style-type: none"> <li>• Calcium</li> <li>• Magnesium</li> <li>• Potassium</li> <li>• Iron</li> </ul> <p>Practical Use</p> <ul style="list-style-type: none"> <li>• <i>Usnodaka</i>      +<br/> <i>Saindhava</i><br/> <i>Lavana</i></li> </ul> | <p><b>Antimicrobial Action</b><br/>                 Effective against plaque-forming organisms and anaerobic bacteria involved in gingivitis and periodontitis</p> <p><b>Salivary Stimulation and pH Regulation</b><br/>                 Saindhava Lavana stimulates salivary secretion, improving:<br/>                 Oral lubrication<br/>                 Natural antimicrobial defense</p> <p><b>Oral–Brain Axis Perspective</b><br/>                 By reducing oral microbial load and inflammatory mediators, Saindhava Lavana indirectly supports:<br/>                 Reduced systemic inflammation<br/>                 Improved neuroimmune balance<br/>                 Better cognitive and mental health outcomes</p>  |

**CONCLUSION**

Close your eyes and picture your favorite food in front of you and you will feel or notice mouth instantly starts to water. The moment you taste it, your senses awaken, triggering the release of neurotransmitters like dopamine and serotonin fueled by the memories and emotions tied to that dish. That’s not just psychological, it’s neurochemical. This happens because your taste buds are connected to your brain. Signals travel from the mouth to the brain, triggering memory centers and releasing mood-related neurotransmitters. If this communication is disrupted because of inflammation, toxins or nerve damage anywhere along the pathway (from gums to cranial nerves to brain centers) the right neurotransmitters may not be released which disturbs the mental wellness. The Oral Gut Brain Axis linked with *Gandusha* and *Kavala* procedure using offer promising, low-cost preventive strategies that support microbial balance and mental wellness.

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