

MUKHA ROGA NIDANA – A PRECURSOR TO THE EXPLORATION OF CRITICAL ANALYSIS IN THE PRESENT ERA

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ABSTRACT

'Prevention is better than cure' – Ayurveda is an ancient science that emphasizes the prevention of diseases. To avert an ailment, one must comprehend its root cause. "Mukha," is deemed the pivotal aspect of the body, serving as the gateway for both the respiratory and digestive systems. In Ayurveda, the ancient scholars have distinctly elucidated the causes of various disorders related to the *Mukha*. This work endeavors to critically review the diverse etiological factors (*Nidana*) contributing to *Mukha Roga*.

KEYWORDS: Nidana, Etiological factors, *Mukha Roga*, Oral diseases.

1. INTRODUCTION

Mukha holds significance as one of the *Nava dvaras* (nine openings) in Ayurveda. According to Ayurvedic principles, *Mukha* is described as "*Khanyate Bhakshyate Anena iti Mukham*," signifying the region involved in the process of eating. The *Mukha* comprises seven distinct structures, namely *Osta* (lips), *Ganda* (cheeks), *Jihwa* (tongue), *Danta* (teeth), *Danta moola* (gums), *Talu* (palate), and *Kanta* (throat). Various etiological factors are identified by different *Acharyas* in Ayurveda as contributors to the development of diseases related to *Mukha*.

A significant number of oral diseases can be effectively prevented and treated when identified at their early stages. As per the World Health Organization's Global Oral Health Status Report for the year 2022, approximately 3.5 billion individuals worldwide are impacted by oral diseases.^[1]

The rise in oral diseases is correlated with the expanding urbanization and lifestyle changes. To ensure an efficient treatment approach, a comprehensive understanding of the underlying causes (*nidanans*) in the current era is crucial.

2. MATERIAL AND METHODS

The reference regarding the *nidanans* of *mukha roga* is gathered from classical Ayurvedic texts, as well as from contemporary texts and articles. These sources are

referred to compile a comprehensive and detailed understanding of the subject.

3. CONCEPTUAL REVIEW

Table 1: Showing different *Nidanans* explained by different *Acharyas*.

Ahara *Nidana*

<i>Nidana</i>	AH ^[2]	AS ^[3]	MN/YR/GN VS ^[4,5,6,7]
<i>Matsya</i>	+	+	+
<i>Mahisha Mamsa</i>	+	+	-
<i>Varaha mamsa</i>	+	+	-
<i>Aamaka mulaka</i>	+	+	-
<i>Masha supa</i>	+	+	-
<i>Dadhi</i>	+	+	+
<i>Ksheera</i>	+	+	+
<i>Shukta</i>	+	+	-
<i>Ikshurasa</i>	+	+	-
<i>Phanitha</i>	+	+	-

Vihara *Nidana*

<i>Nidana</i>	AH	AS	MN/YR/GN VS ^[4,5,6,7]
<i>Avaak shayya</i>	+	+	-
<i>Dwishita dantha dhavana</i>	+	+	-
<i>Dhuma Chardhana Gandoosha Siravedha Uchitha Dwishitha</i>	+	+	-

4. NIDANA

4.1 AHARAJA NIDANA

Even though it may seem like problems in the mouth only affect the mouth, they can actually affect the overall health of the body. A well-established connection exists between oral health and general health. Several health conditions can heighten the susceptibility to oral diseases, and suboptimal oral health can detrimentally influence various general health conditions and their management. Many oral diseases share similar risk factors with chronic conditions such as cardiovascular disease, cancers, diabetes, and respiratory diseases. These shared risk factors encompass unhealthy diets, particularly those rich in added sugar, along with the use of tobacco and alcohol.^[8]

4.1.1 Matsya (Fish)

It possesses *madhura rasa*, *guru guna*, *ushna virya*, and *amla vipaka*. These characteristics have the potential to disturb the balance of kapha and pitta doshas.

Ayurveda classifies fish based on their colour, shape, size, habitat, and distinctive medicinal qualities.

Omega-3 fatty acids and polyunsaturated fatty acids (PUFA) contribute positively to oral health. However, the high temperatures involved in fish baking can lead to guru, impeding the free flow of saliva necessary for cleaning the oral cavity. Additionally, the presence of fish bones poses a risk of injury to the oral mucosa.

A fish allergy has the potential to elicit mild or severe reactions in different organs. Manifestations vary, encompassing symptoms indicative of oral allergy syndrome, wherein the mucous membranes in the mouth and throat may experience tingling or swelling within minutes to hours following exposure.^[9]

4.1.2 Mahisha mamsa (Red meat)

It possesses *madhura rasa*, *guru-snigdha guna*, *ushna veerya*, *madhura vipaka*. All these characteristics are conducive for *mukha roga*. This can lead to *kapha-rakta dushti*.

The amino acid Arginine has been identified as having the potential to decrease both plaque formation and cavities. It's noteworthy that a significant 91% of cases of oral and pharyngeal cancers are attributed to the excessive consumption of red meat. This association is linked to the formation of Heterocyclic amines (HCAs) and Polycyclic aromatic hydrocarbons (PAHs), which are chemical byproducts resulting from the high-temperature cooking methods employed, such as pan frying and grilling directly over an open flame. These HCAs and PAHs have been recognized as mutagenic, capable of inducing changes in DNA that may elevate the risk of cancer, including the development of salivary gland tumours.^[10]

4.1.3 Varaha mamsa (Pork)

Cooking pork (*Varaha mamsa*) at high temperatures, such as baking, can lead to the hardening of the meat. This hardness may contribute to enamel chipping, potentially leading to dental cavities and other oral health concerns.

The components utilized in baking possess inherent acidity, leading to an elevation in the "*amla guna*" in *rakta*, ultimately contributing to the aggravation of the "*pitta dosha*." This, in turn, can result in the development of oral erosions.

Miller's chemico-parasitic theory, also known as the acidogenic theory, posits that when meat is subjected to in vitro incubation with saliva at body temperature, it results in the generation of sufficient acid within a 48-hour period. This acid production is significant enough to lead to the decalcification of sound dentin, followed by the dissolution of the softened residue.

Oral cysticercosis is an uncommon ailment, presenting challenges in clinical identification. This condition arises from the parasitic infestation of the larval stage of the pork tapeworm, known as *Cysticercus cellulosae*, and is termed cysticercosis. Human infestation typically occurs when individuals consume undercooked pork containing *T. solium* cysts. Notably, research indicates that a frequent consumption of pork, exceedingly once a week, is associated with an elevated risk of developing oral cancer.^[12]

4.1.4 Masha (Black gram)

It is of *madhura rasa*, *guru snigdha guna*, *ushna virya*, *katu vipaka* all these are favourable for *mukha roga*.

An increased consumption of *masha* has been linked to elevated levels of uric acid in the bloodstream. Research indicates that heightened uric acid levels may potentially impact the purine metabolism associated with oral conditions, such as periodontitis and tooth resorption.^[13]

Masha is high on Oxalic acid. Oxalic acid disrupts the absorption of calcium by creating an insoluble compound known as calcium oxalate.

Consuming an excessive amount of *masha* can lead to the development of *kaphapitta kara*, causing an imbalance in normal salivary enzymes. This disturbance in salivary pH creates an acidic environment, promoting the proliferation of aciduric bacteria and ultimately contributing to the onset of dental caries. This cycle is perpetuated as dental caries, in turn, exacerbate the reduction in salivary pH, creating a detrimental loop of oral health issues.^[14]

4.1.5 Ama mulaka (Raw raddish)

The distinct flavour of radish is attributed to isothiocyanate, which, through an unidentified enzymatic reaction, can transform into isocyanate. This particular

compound has been identified as a potential causative factor in triggering hypersensitivity reactions, potentially leading to anaphylaxis. Symptoms that may manifest during this process include swelling of the lips, an itchy throat, coughing, and wheezing.

4.1.6 Dadhi (Curd)

Dadhi is *amla rasa*, *guru guna*, *ushna virya*, *amla vipaka* causes *kapha pitta* vitiation and *abhishyandi*. All these factors result in *mukhapaka*. It was found that excessive intake of *amla rasa dravya* may manifest in various signs and symptoms, including dentine hypersensitivity, stomatitis, and halitosis.^[15]

Probiotic bacteria exhibit acidogenic characteristics. When enamel is immersed in a probiotic solution, there is a decline in pH and an elevation in lactic acid concentration within the solution. This affects enamel integrity, leading to a reduction in microhardness, an increase in surface roughness, and alterations in the elemental composition of the enamel. Exposure to probiotics may result in the leaching of vital elements such as calcium and phosphorus from the enamel.^[16]

4.1.7 Ksheera (Milk)

Madhura rasa, *Snigdha guna*, *Ushna virya*, *Amla Vipaka*, *Kaphakara*.

Several research studies have indicated that the presence of Lactobacilli in the oral environment may elevate the abundance of Streptococci species within dental plaque. This interplay has been associated with an elevated risk of developing caries due to the heightened production of extracellular polysaccharides, which contribute to the formation of biofilms.^[16]

4.1.8 Ikshurasa (Sugar cane juice)

Medicinal properties are *madhura rasa*, *madhura vipaka*, *guru snigdha sheeta veerya*, *vata-pitta shamaka*. *madhura rasa* is prominent in *ikshu*, as opposed to *draksha*, *kharjura*, and other *madhura dravyas*.

Sugarcane juice is composed of sucrose, glucose, and fructose, while non-sugar constituents in the juice encompass carbohydrates other than sugars. Notable amino acids found in the juice include asparagine and glutamine. Additionally, the juice contains various vitamins such as thiamine, riboflavin, niacin, pantothenic acid, biotin, and vitamin D.

If sugarcane juice is not consumed promptly after extraction, it may develop a burning sensation known as "*vidahetwata*." Sugar cane juice left overnight tends to be predominantly acidic (*amla rasa pradhana*), heavy (*guru*), pacifying to Vata dosha (*vatashamaka*), dehydrating (*shoshi*), and capable of causing disturbances in the digestive system (*bhedani*). Therefore, it is advisable not to store sugarcane juice for an extended period after extraction.

The identification of classical varieties of sugarcane products (*ikshu vikaras*) poses a challenging task. The *Paundraka* variety of sugarcane, characterized by its nearly white color, is considered superior to the *Vamshaka* kind.^[17]

Sugarcane offers numerous health advantages; however, it's important to note that sucrose, found in sugarcane, is a known contributor to dental cavities. The sucrose content in 100 grams of sugarcane ranges from 5% to 21%.

4.1.9 Phanita (Jaggery)

Amla rasa, *Guru guna*, *Seetha virya*, *madhura vipaka*, *kaphakara*, *abhishyanda* As *guda* (Jaggery) prabhuta *krimi kaphakara* should not be used regularly (as carbohydrates produce acids after fermentation).

The significance of dietary carbohydrates lies in their primary role in facilitating the colonization of microorganisms on tooth surfaces. These carbohydrates enable plaque microorganisms to sustain their life functions, even during periods of nutritional stress. The accumulation of substantial numbers of oral bacteria within dental plaque, along with their ongoing metabolic activities, is a contributing factor to the development of dental caries and periodontal disease.^[18]

4.2 VIHARAJA NIDANA

4.2.1 Avakshayya (sleeping in prone position)

It will impact *vata gati* which in turn will cause increase in *kaphadosha* leading to *mukharoga*.

Avakshayya can disrupt proper aeration, potentially leading to mouth breathing. This can, in turn, contribute to oral mucosa dryness, increasing susceptibility to cavities. Mouth breathing may also induce changes in jaw and tongue posture, thereby affecting Oro-facial equilibrium. Additionally, this breathing pattern can increase the frequency of gingiva exposure to the external atmosphere, resulting in gingival inflammation and enlargement. Disturbances in normal salivary flow and the resultant dryness may contribute to halitosis in individuals practicing mouth breathing.

4.2.2 Dwishitha Danta Dhavana (Neglecting brushing of teeth)

By not doing *dantha dhavana* properly the *annamala* gets accumulated causing different *mukha roga*, that includes *danta sharkara*, *krimi danta*, etc.

"Brush your teeth twice a day with fluoride toothpaste for at least two minutes each time you brush." – This advice is endorsed by the American Dental Association. It is recommended to replace your toothbrush every 3 to 4 months, and if the bristles show signs of wear, bending, or breakage, consider replacing it sooner.

Regular brushing plays a crucial role in removing food particles and plaque from the teeth. Plaque, a sticky

white film containing bacteria, forms on the teeth and can lead to enamel damage when acids are produced by the bacteria after consuming sugary meals or snacks.

The gradual breakdown of tooth enamel due to acid exposure may result in the development of cavities. Additionally, if plaque is not effectively removed, it can harden into tartar, making it more challenging to maintain oral hygiene. Tartar buildup on the gums can contribute to inflammation and the onset of gum disease. Therefore, adhering to a routine of replacing your toothbrush and maintaining proper oral care is essential for overall dental health.

To safeguard your teeth, it's advisable not to brush immediately after consuming acidic foods or drinks, which may include soft drinks like soda, sports beverages, sour candies, citrus juices, and citrus fruits. The high acid content in these items can lead to enamel softening. Brushing too promptly after consuming acidic substances may result in enamel erosion. It is recommended to wait for about an hour before brushing. During this period, saliva works to neutralize the acid, and the enamel undergoes a hardening process again.^[19]

Toothbrush abrasions can manifest when brushing habits are inadequate, such as using back-and-forth motions (horizontal and cross-brushing techniques) with excessive force. These abrasions typically affect the exposed root surfaces of teeth, particularly on the facial surfaces of canines and bicuspids.

Inadequate brushing practices may result in harm to the gingiva, presenting as white, reddish, or ulcerative lesions. These may manifest as linear superficial erosions that impact both the marginal and attached gingiva, particularly in the maxillary region encompassing canines and premolars.

4.2.3 Dhuma Chardhana Gandoosha Siravedha Uchitha Dwishitha (Not adopting treatment whenever needed in particular diseases)

Dhoomapana is explained as a part of *dinacharya* by our *acharyas Vagbhata, Sushruta* and *Charaka*. According to their teachings, *dhoomapana* plays a significant role in maintaining the balance of the *kapha dosha*, with the *shiras* (head) primarily being associated with *kaphasaya*. This traditional approach to *dhoomapana* aligns with the ancient wisdom of Ayurveda, emphasizing its role in harmonizing the *kapha dosha* for overall well-being.

Vamana therapy is recommended for disorders related to imbalanced *kapha* in *aabhadha kapha vyadhis* and *gambheera dhathu gata vyadhis*. Additionally, it finds application during the *Vasantha rithu*, characterized by the peak of *kapha prakopa*, making it an opportune time for *vamana* therapy.

"*Gandoosha* is mentioned as one among the *dinacharya* plays a significant role in preventing decay, oral mal odour, gum bleeding, dryness of the throat, and cracked lips. This practice is instrumental in fortifying teeth, gums, and the jaw, while simultaneously fostering a sense of freshness and preserving vocal clarity. Ideally performed each morning after bladder and bowel evacuation, as well as brushing, *Gandoosha* contributes to the strengthening of oral cavity muscles and nerves, with a particular focus on the facial and glossopharyngeal cranial nerves."

In the context of *Oshta, Danthamoola, and Kanta Rogas*, it is crucial to prioritize *Rakta Mokshana*, as the doshas tend to be entrenched. Failing to incorporate *Rakta Moksha* methods such as *Siravedha* or *Jalukavacharana* could potentially escalate the condition to more severe and challenging stages of diseases that may become *asadya*.

When these procedures are neglected, it can result in an *utklesha* of *kapha* leading to *kapha rakta pradhana mukha roga*. It's crucial to note that these methods primarily address *kapha vyadhi*. On the other hand, *sira vedha* is specifically designed for *raktaja vyadi*. Failure to perform *sira vedha* correctly may lead to *amleekarana* of *rakta*, intensifying *sara* and *drava guna*. This further contributes to the vitiation of *pitta* and *kapha*, ultimately causing various *mukha rogas*.

5. CONCLUSION

The ancient texts provide a detailed explanation of the *nidana* of *mukha roga* in Ayurvedic classics, showcasing a thorough and methodical study. Despite being composed thousands of years ago, this literature appears to offer a scientific explanation, especially when analysed in depth and compared to modern science. Some of the conclusions drawn by the *Acharyas* regarding the *nidana* of *mukha roga* appear to stem from the analysis of physiology, pathology, or extensive surveys. The descriptions are presented in a mythological manner, likely to ensure accessibility for individuals with varying levels of intellectual understanding.

A more comprehensive examination of these descriptions holds the potential to enhance our understanding of physiological and pathological aspects, as well as the practical applications of the *Nidana* of *Mukha rogas*.

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