

**UTILITY OF HERBS WITH ITS PHYSICOCHEMICAL PARAMETER IN ORAL HEALTH: A REVIEW**[Gupta N. D.<sup>1</sup>](#), [Jain S. S.<sup>2</sup>](#)<sup>1</sup>MD scholar, <sup>2</sup>HOD, & Asso. Professor

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**Article Received:** 01/07//2021 - **Peer Reviewed:** 10/07/2021 - **Accepted for Publication:** 11/07/2021**ABSTRACT**

Oral hygiene is the key to one's healthy life. Maintaining oral hygiene is directly related to the body's first line of defence mechanism. It maintains both oral as well as systemic health. Oral microflora plays a very important role in oral hygiene. It is a complex ecosystem of several species of micro-organisms such as streptococci, Neisseria, Veillonella, Actinomyces and other obligate anaerobes. This microbiome is mainly affected by an acidic diet and the acidic environment of the oral cavity. Poor oral hygiene decreases the rate of survival of the oral microbiome and causes dental caries, periodontal diseases, halitosis oral pain & discomfort. Hence, it becomes very essential to maintain the environment of oral cavity friendly to oral microflora. Ayurveda is the science of preserving one's health has described various herbs to maintain oral hygiene such as *Khadira* (Catechu tree), *Sunthi* (Ginger), *Daruharidra* (Indian Berbery), *Tankana* (Borax), etc. But, to attain its global acceptability physicochemical parameter is used to describe their action. Based on physicochemical parameters herbs seem to be effective in the maintenance of oral hygiene and can reduce the chances of oral diseases.

**Keywords:** Oral hygiene, Oral microflora, physicochemical parameter, pH, etc.

## INTRODUCTION

The oral cavity is a special organ of the human body and entry points to the digestive and respiratory tracts. It provides the body's first and natural defence mechanism against various micro-organisms. Hence, oral health is essential for total health. According to WHO (2012), oral health is defined as a state of being free of mouth from facial pain, oral infections, oral sores and other diseases that limit an individual's capacity in biting, chewing, smiling, speaking, and psychological well-being. <sup>[1]</sup> Oral health can be maintained by proper oral hygiene. Oral hygiene means the practice of keeping the mouth and teeth healthy and clean by regular brushing, flossing and tongue scraping to prevent bad odour and dental problems. Many research studies have shown that people with poor oral hygiene are at more risk of developing various oral health issues. Improper oral hygiene has a direct relation with an increased rate of dental caries, periodontal diseases, halitosis, oral pain & discomfort. <sup>[2]</sup> It is generally found in children living in poverty, socially marginalized groups and older people. <sup>[3]</sup> It is stated that approximate 3.5 billion people are affected by oral diseases. <sup>[4]</sup> Oral health is depending on the oral microbiome which is a complex ecosystem where several species of microorganisms are present. The oral microbial flora plays a very important role in the development of normal host defence mechanisms and prevents colonization of exogenous organisms. <sup>[5]</sup> The neutral pH of the oral cavity 6.35 to 6.85 and proper oral hygiene are essential for the growth of oral microflora. <sup>[6]</sup> Poor oral hygiene and an acidic environment disturb the function of oral microflora which leads to gingivitis, periodontal diseases and dental cavities. <sup>[7]</sup> In the present era, it is seen that people are using various mouthwashes, tooth powders, kinds of toothpaste, etc to keep the oral cavity healthy. But some of these products are costly and show their side effects like taste disturbance, tooth staining, the sensation of dry mouth, etc. Alcohol containing mouthwashes may make dry mouth and halitosis worse as it dries out the mouth. <sup>[8,9]</sup>

Ayurveda is the science of preservation and prevention of health. *Gandusha, Kawala, Pratisarana, Nasya, Mukhalepa*, etc. are the procedures in which various herbs are used to maintain oral health and to cure oral diseases. In Ayurveda classical text it is proven that herbs like *Khadira, Daruharidra, Sunthi* and *Tankana*, Charcoal are effective in keeping one's oral cavity healthy. Also, the physicochemical parameter pH of these drugs is studied to attain the global acceptability of this study. Hence, further study is planned to keep the oral cavity healthy by using these drugs effectively without any side effects.

## MATERIAL & METHOD

Systematic research was made through the medical database using keywords oral health, Oral hygiene, Oral microflora, physicochemical property, pH, *Khadira* (*Acacia Catechu*), *Daruharidra* (*Berberis Aristata*), *Sunthi* (*Zingiber Officinale*), *Tankana* (*Borax*), Charcoal and Cow manure. Also, literature was collected from various Samhita and their commentaries, medical journal, newspaper, articles, etc.

**Oral Cavity:** The oral cavity is also known as a buccal cavity. It is formed by cheeks, lips and palate. It encloses the teeth, tongue and salivary glands. The mouth opens anteriorly to the exterior through lips and posteriorly through fauces into the larynx. Digestive juice present in the mouth is saliva, which is secreted by the salivary glands having pH 6.35 – 6.85. <sup>[10]</sup>

**Oral Microflora:** It is a complex ecosystem where several species of microorganisms are present. It has been found that around 700 species of bacteria are found in the oral cavity. The predominant group of bacteria present in the oral cavity includes streptococci, Neisseria, Veillonella, Actinomyces and other obligate anaerobes. <sup>[11]</sup> These microorganisms are present on mucosal surfaces of the tongue, buccal mucosa, tooth surfaces, gingival crevices. The oral microbiome is the principal factor in maintaining both oral and systemic health.

## Drugs & Their Properties

**Table 1:** Drugs acting on the oral cavity (*Mukha*) with their properties & physicochemical parameter.

Drug Name/ Properties	<i>Khadira</i> (Catechu tree)	<i>Sunthi</i> (Ginger)	<i>Daruharidra</i> (Indian Berbery)	<i>Tankana</i> (Borax)
Latin/ Chemical Name	Acacia Catechu	Zingiber officinale	Berberis Aristata	Sodium Pyroborate
<i>Rasa</i>	<i>Tikta, Kashaya</i>	<i>Katu</i>	<i>Tikta, Kashaya</i>	<i>Katu</i>
<i>Guna</i>	<i>Laghu, Ruksha</i>	<i>Snigdha, Laghu</i>	<i>Laghu, Ruksha</i>	<i>Ruksha, Sara, Tikshna</i>
<i>Veerya</i>	<i>Shita</i>	<i>Ushna</i>	<i>Ushna</i>	<i>Ushna</i>
<i>Vipaka</i>	<i>Katu</i>	<i>Madhura</i>	<i>Katu</i>	
<i>Doshaghnata</i>	<i>Kapha pitta Shamaka</i>	<i>Vata Kapha Shamaka</i>	<i>Kapha pitta Shamaka</i>	<i>Vata Kapha Shamaka</i>
<i>Rogaghnata</i>	<i>Mukha, Dantya</i>	<i>Swarya, Shopha, Shula</i>	<i>Mukha, Karna, Netra</i>	<i>Vrana, kasa, Shwasa</i>
Part used	Bark <sup>[12]</sup>	Rhizome <sup>[14]</sup>	Root, Fruits <sup>[16]</sup>	Mineral <sup>[18]</sup>
pH	6.02- 6.04 <sup>[13]</sup>	4 -7 <sup>[15]</sup>	6-8 <sup>[17]</sup>	9.5 <sup>[19]</sup>

**Table 2:** Drugs & its physicochemical parameter

Drugs	pH
<i>Gomaya</i> (Cow Manure)	6-8 <sup>[20]</sup>
<i>Koyala</i> (Charcoal powder)	6-9 <sup>[21]</sup>

## DISCUSSION

The drugs mentioned above are *Khadira* (Catechu tree), *Sunthi* (Ginger), *Daruharidra* (Indian Berbery), *Tankana* (Borax), *Gomaya* (Cow Manure) and *Koyala* (Charcoal powder). These drugs are effectively maintaining oral health is proven in Ayurveda classical text. The pH of the oral cavity is 6.35 to 6.85. This range of pH is necessary for the growth of oral microflora. An acidic diet drops the pH of the oral cavity around 5.0. This drop-in pH is lethal for bacteria and causes damage to tooth enamel. On the other hand, poor oral hygiene disturbs the function of oral microflora which leads to gingivitis, periodontal diseases and dental cavities. <sup>[7]</sup> In addition, poor oral hygiene has been linked to conditions like Osteoporosis, Diabetes Mellitus, cardiovascular diseases, Infective Endocarditis and Bacterial pneumonia. <sup>[22]</sup> The above drugs have a pH range between 6 to 9 which makes a healthy environment for the growth of oral microflora. The healthy microbiome keeps the oral cavity healthy.

## CONCLUSION

*Khadira* (Catechu tree), *Sunthi* (Ginger), *Daruharidra* (Indian Berbery), *Tankana* (Borax), *Gomaya* (Cow Manure) and *Koyala* (Charcoal powder) are being effective in oral health and *Mukharoga* (Diseases of the oral cavity). It can be used as a single drug or combination of any 2-3 drugs. Also, it can be used in formulations like tooth powder, toothpaste, *Kwath* for *Gandusha*, *Kawala*, Powder for *Pratisarana*, etc. and can keep their oral cavity healthy life long.

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