

LOW COST TOOTH PASTE AND MOUTHWASH FROM POTATO AND CURRY LEAVESSuraj M. Math*¹ and Mahantayya V. Math²¹Speciality Doctor, Glangwili General Hospital, Dolgwili Road, Carmarthen SA31 2AF, UK.²Honorary Associate Professor, Department of Physiology, MGM Medical College Navi Mumbai Maharashtra State, India.***Corresponding Author: Dr. Suraj M. Math**

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ABSTRACT

Prevalence of oral diseases like caries and periodontitis is more in people in poor and developing countries. They are not able to afford for oral health care. Many cannot afford fluoride tooth paste and other oral hygiene products. Use of raw potato paste and fresh curry leaves paste mixed in water, this produces foam. The paste with water can be used as tooth paste and mouthwash which are easily affordable as they are low cost vegetables.

INTRODUCTION

Many poor people in developing countries suffer from oral diseases because oral health services are offered at regional hospitals of the large, urban cities.^[1] (Peterson et al., 2003) According to The Global Burden of Disease Study 2019 oral diseases affect about 3.5 billion people worldwide, with caries of permanent teeth (the most common disease). Globally, about 2 billion people suffer from caries of permanent teeth and 520 million children suffer from caries of primary teeth.^[1] In many low- and middle-income countries, the prevalence of oral diseases is increasing. This is likely to be due to inadequate exposure to fluoride (in the water supply and oral hygiene products such as toothpaste), increased availability and affordability of food with high sugar content. Marketing of food and beverages high in sugar, and also tobacco and alcohol, have contributed to increase in oral diseases and other noncommunicable disease.^[1,2]

METHODS AND RESULTS

Raw potato pieces when washed in water produces foam and curry leaves paste also produces foam in water. Two medium sized potato pieces (after peeling the skin) were used. They were grated with a grater and grinded with 10 ml of water to get potato paste. Sixty curry leaves with 10 ml of water were grinded to get curry leaves paste. Both potato paste and curry leaves paste were mixed in 30ml water. The mixture was gently mixed. Foam was observed as shown in Fig1. Foam with mixed paste can be used as tooth paste or mouthwash.



Fig. 1: Foam obtained with raw potato paste and curry leaves paste mixed in water. (After peeling the skin raw potato pieces were grated and then grinded with 10ml water to obtain potato paste, Sixty .fresh curry leaves were grinded with 10ml water to get curry leaves paste. To this a few drops of vegetable oil like palm oil can be added as lubricant.

REVIEW

Dental caries is considered as a preventable non-communicable disease (NCD) that affects a majority of the population across their lifespan.^[3] Periodontal disease, cardiovascular and circulatory disease, diabetes mellitus, chronic respiratory disease and obesity, are also globally regarded the major non-communicable diseases (NCDs).^[4]

The effective prevention and management of most dental diseases requires a long-term approach. Populations oral health needs are often not aligned with availability, location, and dental care provided by public service.^[5]

The most prevalent oral diseases and disorders are linked to the four most prevalent non-communicable diseases such as cardiovascular disease (CVD), cancer, diabetes, and chronic respiratory diseases.^[6]

In a recent study by Guo and colleagues have observed high intake of sugar snacks and low intake of fruit, vegetables, and dietary fiber is observed in high caries-active individuals.^[7]

The number of people with untreated oral diseases have increased from 2.5 billion in 1990 to 3.5 billion in 2015,^[8] Poor oral hygiene is associated not only with systemic diseases, but also with several oral diseases. In 2020 between 720 and 811 million people faced hunger (people from Asia, Africa, Latin America and the Caribbean). The prevalence of undernourishment (PoU) increased to about 9.9 percent in 2020, from 8.4 percent a year earlier.^[4] Around 660 million people may still face hunger in 2030.^[8]

Potato has been used as vegetable since ancient time. Potatoes originated in the South American country of Peru. They were cultivated by the Incas more than two thousand years before they were discovered by the Spanish invaders.^[17]

Potato is now the world's third most important food crop in terms of human consumption, after wheat and rice.^[9] potatoes are an essential source of energy, protein, and micronutrients like iron and zinc. They also provide key nutrients to the diet including vitamin C, potassium, magnesium and dietary fibre. Potato remains a staple food in rural areas in developing countries. Both potato and curry leaves are low cost vegetables and they are used in traditional medicine. Potato has pH from 5.5 to 6.2. and potato juice has pH of 5.8-6.0.^[10] Essential oil mouthwash is a key component in oral health management.^[11] Curry leaves are grown all over India and other countries for its aromatic leaves which are used daily as an ingredient in Indian cuisine since ancient time. The cold extract of curry leaves in distilled water has a pH of 6.3 to 6.4.^[12] Curry leaves are rich in essential oil, terpenes, carotene, folic acid and chlorophyll.^[12] Curry leaves are helpful in oral health care. Curry leaves mouthwash is effective in keeping oral hygiene similar to chlorhexidine mouthwash.

About 51% of Indians use a toothbrush and toothpaste to brush their teeth. Around 28% brush their teeth the recommended two times a day.^[13] The increased sugar consumption, cariogenic bacteria and poor oral hygiene, as major causes of dental caries.^[14]

Dr Marjorie Cowan, of the Miami University in Ohio, observed that water extract from the potato will help stop the organism that causes tooth decay from clinging to teeth. The compound in the extract that inhibits bacterial adhesion. is called polyphenol oxidase (PPO), "Nearly all micro-organisms must secure themselves to their target tissue in order to cause disease. Preventing or disrupting the attachment of micro-organisms. is a helpful mechanism in preventing disease." (Independent0.^[15,16,17] Polyphenolic compounds totally eliminate methylmercaptan odour (bad smell) from mouth.^[18] Streptococcus mutans and Streptococcus sobrinus, are associated with dental caries in humans.^[19]

Potato is having resistant starch, antioxidants and also has minerals, vitamins, carotenoids and phenolic compounds.^[20,21] Potato Foam is generated from the starch and protein interacting with the water. This is because starch is released into the water. The soluble potato proteins are mainly composed of patatin and protease inhibitor which have role in foam formation.^[16] Potato is also rich in potassium and magnesium. Raw potato pieces produce foam when washed in water.^[19,20] Potato is used as folk medicine.

Fresh curry (*Murraya koenigii*) leaves are known for their nice aroma in Indian cuisine, and they have neuroprotective effects.^[22] The curry leaves (*Murraya koenigii* Leaves) are also having flavonoids, glycosides, beta carotene, phenols, saponins, folic acid and tannins.^[22] Curry leaves are rich in vitamins (vitamin C, β -carotene, niacin, riboflavin, thiamine), and α -tocopherol) and minerals (calcium, magnesium, potassium, sodium, phosphorous and zinc). Curry leaves have multiple therapeutic potentials.

Curry leaves are useful in maintaining oral hygiene and also in reducing bad breath from mouth.^[12,26,31] Carotenoids may be helpful in treating periodontitis.^[32] Periodontitis is a polymicrobial infectious disease that leads to inflammation of the gingiva, resulting in teeth loss.^[32] Curry leaves are containing beta carotene, chlorophyll, terpenes and saponin which help in keeping good oral hygiene. Paste obtained from raw potato pieces and also from fresh curry leaves after grinding when mixed in water produces foam. Use of curry leaves gives fresh aroma feeling in the mouth. Potato foam can be used for washing hands to remove glue (which sticky) from the hands.^[24]

FDI (FDI World Dental Federation) has proposed strategies to create opportunities to improve oral health, and contribute to reducing the global burden of oral diseases by year 203.^[33] Oral health is important for overall health and well-being. This century started with the recognition that oral health is central to overall health. It's necessary to engage people and communities to consider social, and economic, impact of poor oral health.^[34]

CONCLUSION

Both potato and curry leaves are low cost vegetables and they are affordable by all people. They can be used for making tooth paste or mouthwash at home which are safe to use.

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