TITLE: PRACTICING HOLISTIC DENTISTRY USING COCOS NUCIFERA POST COVID 19 OUTBREAK - AN OVERVIEW.

Authors:
1. Dr. Upasana Reddy, Lecturer,
   Dept of Conservative Dentistry and Endodontics,
   A.B Shetty Memorial Institute of Dental Sciences

2. Prof. Dr. Mithra N Hegde
   Vice Principal
   Department of Conservative Dentistry and Endodontics,
   A.B Shetty Memorial Institute of Dental Sciences

3. Dr. Ashith MV
   Associate Professor,
   Department of Orthodontics and Dentofacial Orthopedics,
   Manipal College of dental sciences
   Mangalore, Affiliated to Manipal academy of higher Education, Manipal.

Corresponding Author: Dr. Upasana Reddy,
Email id: drupasana@nitte.edu.in
Address: Department of Conservative Dentistry and Endodontics,
A.B Shetty Memorial Institute of Dental Sciences,
Deralakatte, Mangalore.
Abstract: this report highlights the benefits of virgin coconut oil which can be used as an effective preventive agent before onset of dental caries. Along with its antibacterial and antiseptic properties it also has a moisturizing effect on soft tissues, hydrates the oral cavity in cases of xerostomia and gingival inflammation. Hence, need of widespread clinical trials among diverse populations in the future, can promote these nutraceuticals as a topical applicator for patients with chronic systemic diseases and during therapy to patients with head and neck cancers and immunocompromised patients during the ongoing pandemic.

Keywords: coconut oil, holistic dentistry, oil pulling, preventive dentistry

Introduction:
The word coconut is derived from coco which is taken from Portuguese and Spanish language during the 16th-century. It gets this name owing to the indentations on the coconut shell-like that on a "human skull" and Nucifera is a term derived from Latin meaning "nut-bearing".¹

The properties of the coconut palm are so diverse and versatile hence it has several synonyms like "the tree which provides all the necessities of life" (kalpa vriksha) in Sanskrit, "the tree of a thousand uses" (pokok seribu guna) in Malay and "tree of life" in the Philippines.² The common product of this plant is coconut water, which if fermented gives us vinegar. Followed by coconut milk, coconut oil, the husk, and shell are also used as a source of energy in the form of charcoal. A frayed twig of coconut root is used as toothbrushes, a remedy for dysentery and diarrhea in rural India even today.³ So clearly every part of the plant has a medicinal relevance.

Discussion:
Of all its produce Virgin coconut oil (VCO) is in recent times gaining popularity globally due to its medicinal and holistic properties. It is obtained directly from fresh coconut meat by either drying the freshly grated coconut at a temperature less than 600 °C, followed by pressing for oil or by adding an enzyme to milk from the coconut meat and aging for several hours.

Refined Coconut oil and VCO are almost the same in terms of chemical properties, both forms of oil have medium-chain fatty acid (MCFA) in their compositions. Commercially available oil is refined, bleached and deodorized and hence loses the biologically active substances. Tocopherols, Tocotrienols, Phytosterols, Flavonoids, and other polyphenols are all biologically active constituents of virgin oil with
antioxidant activity. They may also have anti-atherogenic, anticarcinogenic and antiseptic actions. Tocopherols may also have a role in the prevention of coronary heart disease, gingival bleeding, and cancer. Virgin oil is unprocessed at low temperatures and retains biological active nutrients which are responsible for the prevention of chronic diseases and may be used in therapeutic interventions for cancer patients to tolerate the side-effects of radiation in the oral cavity. Although the practice of oil pulling has its origin from Ayurveda and comprises of rinsing without ingesting edible oil to prevent and manage oral conditions such as tooth decay, trismus, halitosis, gingival inflammation, and dry mouth or xerostomia. A search of literature gives us several studies as early as 1992 by Rosenberg et al who prove its anti-microbial activity and studies more recently done by Asokan et al who have highlighted the anti-bacterial capability of coconut oil pulling effective on bacteria such as S. mutans, S. mitis and S. viridians, L. acidophilus. The safety and effectiveness of oil pulling on hard tissues of a tooth has been assessed by Hegde M N and colleagues who have reported changes in the hydroxyapatite crystals when the pH of the oral cavity drops below the critical value. They performed a comparative study of virgin coconut oil with other natural therapeutics and concluded better enamel crystallinity post-radiation using oil due to the formation of a protective layer.

Oil pulling has been stated as an effective preventive therapy in several microbiological studies but there is a lack of human studies to support its clinical effectiveness. Its saponification mechanism of action not only moisturizes the soft tissues but also forms a protective layer over the hard tissues as a mechanical barrier. Further studies can bring to light other widespread benefits of coconut oil as a nutraceutical which remains an area of research yet to be discovered. No other commercially available over the counter oral rinse can compete with the benefits of coconut oil to be used daily. Oil pulling offers a less invasive and readily acceptable alternative to many patients as it is palatable, readily available and non-toxic even if accidentally consumed during the pulling process. However, there is a need for clinical trials with diverse populations to gather scientific evidence for it to be prescribed for routine use to maintain oral hygiene among patients with long-standing systemic diseases, patients undergoing radiation or chemotherapy.

Oil pulling is an ancient practice that can effectively maintain oral hygiene, and this practice has gained remarkable importance in several developed countries. The procedure is performed in a seated position with chin up and can be practiced thrice daily on an empty stomach, it involves swishing one tablespoon of oil in the mouth for about 20 min, preferably in the morning. It is even advised for children above the age of 5 years. If performed correctly, the oil turns milky-white and less viscous. Then, it should be spat
out; caution must be taken to avoid swallowing the oil. Thereafter, the mouth should be thoroughly washed with warm saline water, and the teeth should be cleaned with fingers or routine tooth brushing should be performed.

In patients with oral ulcers, fever, vomiting tendency, asthma, and in conditions where brushing is difficult or contraindicated, oil pulling is said to be beneficial and can be advised for maintaining oral hygiene.\textsuperscript{13} VCO has shown efficacy in restoring and reversing common oral symptoms experienced by patients during radiation therapy, which are very similar to symptoms elicited by those positive with the coronavirus.

Oil pulling with coconut oil can aid in stimulating the immune system. In addition, coconut oil is known to confer numerous health-related benefits, which also include its antioxidant action - owing to the high content of mineral ions. Thus, oil pulling is being propagated as a preventive measure against common symptoms of COVID-19.\textsuperscript{14} Scientists speculate that oil pulling benefits through alkali hydrolysis of fat, which renders saponification and emulsification, enhancing the mechanical cleansing action of oil.\textsuperscript{15}

The results of a 2017 randomized controlled trial conducted in Hyderabad, India, among 40 dental students found that oil pulling is effective in controlling plaque levels.\textsuperscript{16} The presence of medium-chain fatty acid in coconut oil makes it a preferred option for eradicating germs from the oral cavity. Coconut oil contains 92% saturated acids, of which about 50% is lauric acid. The latter is known to harbour antibacterial and antifungal effects. Evidence suggests that VCO inhibits the growth of \textit{Staphylococcus aureus} through – the destruction of the bacterial cell wall and increasing phagocytosis mechanism of immune cells.

Coconut oil has significant antimicrobial activity against \textit{Helicobacter pylori}, \textit{Escherichia vulneris}, \textit{Enterobacter} spp. and \textit{Candida} spp. – \textit{Candida albicans}, \textit{Candida glabrata}, \textit{Candida tropicalis}, \textit{Candida parapsilosis}, \textit{Candida stellatoidea} and \textit{Candida krusei}.\textsuperscript{17} In developing countries like India – with limited healthcare infrastructure in most regions – coconut oil pulling can be an effective measure for pulling infection – bacteria, toxins, and pus – out of the tissues and can aid in the maintenance of oral hygiene.\textsuperscript{18}

The ongoing pandemic has posed limitations to dental practice. In the current scenario of the coronavirus disease-2019 (COVID-19) pandemic, many patients present with symptoms like burning of the eyes, nose, throat, xerostomia, and mouth ulcers.\textsuperscript{18} For this, the Ministry of AYUSH is promoting oil pulling as a preventive measure. Although most practitioners are aware of benefits of oil pulling and its significance in maintaining oral hygiene, yet there is a resistance in recommending and prescribing it routinely.\textsuperscript{19} A clinical trial to show the \textit{in vivo} effects of oil pulling is the need of the hour.\textsuperscript{20} Our aim is to increase the awareness and confidence of dental practitioners in prescribing a simple technique for ameliorating common symptoms of COVID-19 infection – by oil pulling, in routine clinical practice.
References:


