

Cocos Nucifera: Its Properties and Contributions to Dentistry

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Abstract

Though still part of daily diets for many, traditions consider Coconut or *Cocos nucifera*, and its components have valuable properties for medical and healing purposes. The water within the fruit has a high content of electrolytes, used for oral rehydration purposes, blood transfusion and avulsed tooth transport mediums, culture medium for cell culture studies. Past generations believed coconuts protect against medical illnesses. Studies recognize traditional Indian folk remedy using coconut oil for strengthening teeth and gums by preventing decay, oral malodor, bleeding gums, and cracked lips. Researchers should explore these components and integrate in medical systems to relieve and prevent diseases, plus incorporating them into products used in dentistry. Herbal remedies as adjuncts to our daily hygiene may improve our health. The use of herbal products should be certified based on literature evidence. Scientific data and validations of such traditional approaches could justify the use of such products in dentistry.

Keywords: Coconuts, Coconut Oil, Oral Hygiene Adjunct, Culture Medium.

Conventional health treatments have been practiced and revised for many years, but the recent era has been visualizing a new trend into the medical fraternity. The inclination towards an alternative treatment comprising of herbal remedies to treat systemic conditions have been globally accepted. A wide range of herbal extracts have been explored and studied to extricate their health benefits. Among them, coconut have been used as traditional medicine for many illnesses. The coconut palm, *Cocos nucifera*, belongs to the family *Arecaceae*. The term 'coconut' botanically is classified as a fibrous one-seeded drupe. It is highly nutritious, rich in fiber, vitamins and minerals.

Coconuts have their origin all over the globe with major focus in the tropics such as India, Sri Lanka, Brazil etc. They are part of a staple diet of such areas and are readily available to many, therefore parts of the coconuts can be easily accessed for different uses.

Dental diseases like caries, gingivitis are commonly overlooked health problem affecting 60-

90% of children and the majority of adults in industrialized countries. Literature search provides information that coconut oil was found to have antibacterial effect against most strains of *Streptococcus* bacteria, including *S. mutans* that is responsible for causing caries and gingivitis.^{1,2} This fruit is also known for its commercial, domestic and industrial uses, but it has also been used for medical benefits according to traditional and modern medicine in the following ways³:

- Healing Wounds: the ability to accelerate re-epithelialization, improve antioxidant enzyme activity, and stimulate higher collagen cross-linking within the tissue being repaired.
- Supplying our bodies with energy, due to its high levels of electrolytes.
- Its antimicrobial properties heal many conditions such as athlete's foot and dermatitis.
- Anti-ageing and antioxidant properties

- The Medium Chain Triglycerides present in coconut oil lowers the level of cholesterol; helps clear blockages therefore cutting down the risk of a heart attack.⁴
- Anti-Ulcer Activity: Coconut milk as an NSAID-associated anti-ulcer agent.

This paper highlights the benefits of various forms of coconut used in dentistry. With the knowledge of all the indispensable properties and uses of coconuts, incorporation into treatment modalities can be beneficial to the patient as well as the clinician as an alternative therapy.

An important part of the Coconut Tree is the Coconut Fruit which is considered as a functional food. It mainly consists of three layers: the exocarp (outer layer), the mesocarp (fleshy, middle layer), and the endocarp (hard, woody layer that surrounds the seed.⁵ The exocarp and mesocarp make up the husk of the coconut, which was utilized as an indigenous toothbrush. The babassu (*Orbignya phalerata*) is a native tree of the Arecaceae (Palmae) family from northern Brazil. The mesocarp of Babassu variant of coconut has been widely used as a treatment of pain, fever, ulcerations, tumors, wounds, and inflammation.

Chemical constituents in coconut fruit include:

- Lauric acid, is a crystalline fatty acid occurring as glycerides in 45-52% of coconut oil, is converted to a monoglyceride called monolaurin. It is a strong anti-viral, anti-bacterial and anti-protozoal agent.
- Myristic acid, a saturated fatty acid, 16-21% in coconut oil is commonly used as a flavoring agent and is an important to stabilize many proteins.
- Caprylic acid: 5-10% and Caproic acid: 0.5-1% are potent antifungal agents found in coconut oil. These acids work by interfering with the cell walls of the Candida yeast. Capric acid has strong antiviral and antimicrobial properties.
- Palmitic acid, due to their medium-chain fatty acids, which are utilized for energy and do not

raise cholesterol levels and displays antioxidant.

- Oleic acid is known to be rich in antioxidants that help remove free radicals in the body.
- Linoleic acid, an omega-6 fatty acid, an essential fatty acid, potent anti-oxidant, anti-carcinogen, and a powerful immune system enhancer and is effective in children who suffer from cystic fibrosis from essential fatty acid deficiency due to malabsorption, as well as dermatitis, which is one of the first signs of an essential fatty acid deficiency in humans.
- Stearic acid is a saturated fatty acid, commonly seen in various soaps as a detergent, lubricant etc.

Other components present, comprise of Vitamin E, moisture and suspensions of proteins. All these constituents supplement for the health benefits.

Beneficial uses of coconut in dentistry:

Coconut oil is used to practice Oil Pulling or Oil Mulling. Oil pulling is an ancient act of “swishing or swirling” oil in ones’ oral cavity, resulting in rinsing the mouth with natural oils. It is an Ayurveda remedy that was traditionally used in India, for cleansing and maintaining oral health and systemic health. This process involves swishing a tablespoon of coconut oil in the mouth for 20 minutes. The oil with the bacterial contents is spit out, and the patient is advised to brush normally. The swirling action creates a negative pressure in the oral cavity. Along with the pressure build-up and the viscosity of the oil, aids in collecting food particles, bacteria or any other microorganisms that may be present on the tooth and gingival surfaces. The debris gets trapped within the oil and gets pulled away from the tooth surface, and into the whirlpool of the oil.⁶

The clear liquid within the fruit which is an electrolyte-packed drink is also extremely refreshing and contains a variety of nutrients including vitamins, antioxidants, amino acids, growth factors, enzymes and other major minerals like magnesium, calcium, and potassium.⁶ It is useful in preventing and relieving many health problems including dehydration, digestive disorders, malnutrition, fatigue,

osteoporosis etc. Cytokinins, a valuable plant growth hormones, present in coconut water regulate growth, development, and aging. For this reason, coconut water is used extensively as a growth-promoting component in tissue cultures. It also serves as storage media to preserve the viability of periodontal ligament cells (7&8). Since it is hygienic and sterile, it has been used as a transport medium for an avulsed tooth in cases of emergencies.⁸

Coconuts have been in our midst for centuries and it contains constituents with beneficial properties. Researchers should be able to investigate these components and incorporate into medical system that can help relieve and prevent diseases. Countries with an ancestral background of traditional medicine should support and integrate herbal remedies as an adjunct along with current health care systems. However, the use of these herbal products /practices should be ensured based on literature evidence. Scientific data and validations of such traditional approaches could justify the use of such products in dentistry.

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