Oil pulling and dental perspectives

Shailja Chatterjee

Email: shailjachatterjee@gmail.com

Abstract

Oil pulling is a traditional method used to maintain oral hygiene using household oil products such as sesame, coconut, olive, and sunflower oil. This method when routinely practiced can biologically reduce the microbial counts of oral pathogenic bacteria. The mechanism of action involved is still unclear though, the role of saponification and emulsification has been considered central to this process. This review paper deals with the benefits of oil pulling and highlights traditional methods in practice of oral health maintenance.

Key words: Oil pulling, oils, Ayurvedic, oral microbial count, disease

What is “Oil Pulling”?

Oil pulling/swishing is a holistic Ayurvedic procedure that involves oil swishing within mouth for both oral as well as systemic benefits. This practice has been in existence in India for many centuries. Oil pulling with sesame oil is a traditional Indian treatment for maintenance of gingival health and reduction of dental caries. ‘Randomized controlled’ trials conducted by Asokan et al. have provided evidence of this therapy’s equivalence in maintaining the effectiveness in reducing mutans streptococci counts, plaque, and gingival indices. Dr F Karach introduced as well as popularized this concept in Russia.

History of oil pulling

Oil (Taila in Sanskrit) pulling is an ancient Ayurvedic treatment. In Charak Samhita, an ancient Ayurvedic text, this procedure has been described as Gandusha or Kavala. It has been used as traditional therapy for prevention of dental caries, gingival, and periodontal diseases and for strengthening of teeth.

Oils used in this technique are - refined sunflower oil, sesame oil, coconut oil, olive oil, etc. In Gandusha technique, the mouth is completely filled with oil which is held for three to five minutes and then spitted out. In Kavale technique, oil is retained within mouth for three minutes and spitted out.

Antimicrobial efficacy

The antimicrobial effect of these oils is exerted by various active constituents inherently present. For example, coconut oil comprises of 92 percent saturated acids, of which 50 percent is lauric acid. The microbiocidal effect of coconut oil was first reported by Hierholzer and Kabara (1982). Electron microscopic analysis demonstrated that exposure to these oils for a duration of about 15 minutes caused cell wall shrinkage and membrane fragmentation in Gram-positive cocci. Its antimicrobial efficacy has been proven against Escherichia vulveris, Enterobacter spp, Helicobacter pylori, Staphylococcus aureus, Candida spp. such as: Candida albicans; Candida tropicalis; Candida glabrata; Candida parapsilosis; Candida krusei and Escherichia coli. The destruction of cell wall and membrane causes inhibition of metabolic enzymes resulting in bacterial lysis. Antiviral activity is presented by solubilization of lipids and phospholipid component of envelope leading to viral disintegration.

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Sunflower oil shows antimicrobial activity against *S. aureus*, *Pseudomonas aeruginosa*, *Streptococcus pyogenes*, *C. albicans*, and *Enterococcus faecalis*.2

Oleocantal is a bioactive component in olive oil which possesses both cyclooxygenase-1 (COX) and COX-2 inhibitory activity. This compound has been shown to have similar sensory and pharmacological properties as that of nonsteroidal anti-inflammatory drugs (NSAIDs).3

Additionally, the oil viscosity inhibits bacterial adhesion and co-aggregation preventing plaque accumulation.5

Gram-positive bacteria such as *Streptococci mutans* are more susceptible to antibacterial activity of fatty acids as compared to Gram negative bacteria.3

Halitosis is result of volatile sulphide compounds such as hydrogen sulphide, methyl mercaptan and dimethyl sulphide. These compounds result from proteolytic peptide degradation of epithelial cells and oral microorganisms. Gram-negative bacteria responsible for causation of gingivitis and periodontitis are responsible for production of this sulphide compounds.4

**Procedure of oil pulling**

Oil is sipped, sucked through teeth and swished around for 10 to 15 minutes till it becomes milky-white in appearance and becomes thin in consistency. It is preferably practiced in the early morning hours in sunlight and in an upright position. This practice can be done for at least three times a day. Oil pulling is contraindicated for children below five years of age due to risk involved such as swallowing and pulmonary aspiration.2,5

Singla et al. (2014) performed a clinical trial to assess oral health benefits of gingival massage therapy in oil pulling. This technique was found to have additional benefits such as mechanical disruption of biofilm, stimulation of blood circulation, enhancement of immune response in addition to antimicrobial activity.6

**Mechanism of action**

The exact mechanism involved in oil pulling is unclear. This process activates enzyme secretion from salivary glands.5

Oil pulling involves both saponification and emulsification processes. Fat content in edible oils are mainly triglycerides comprised of triglycerides and “three” fatty acid side-chains. Emulsification is a process wherein fat globules are broken down into small molecules so that water-soluble enzymes can act upon these small lipid droplets. Small sizes of triglycerides and fat droplets are then digested by “lingual lipase,” which is secreted by von Ebner’s glands. Free fatty acids are produced as a result of lipase activity. Increased sodium hydroxide (NaOH) consumption during titration experiments performed by Asokan et al. indicate a saponification process during oil pulling.1 Saponification process in intra-oral environment is created by activity of salivary alkalies such as: bicarbonates. The soap-forming or saponification process mediates the emulsification process where the oil is broken down into small droplets thus, increasing the cleansing action.5

**Disadvantages associated with “oil-pulling” procedure**

**Systemic complications:** Lipoid proteinases, mineral oil aspiration and diarrhea are few of the adverse events reported in literature associated with oil pulling.9

**Cost benefit:** Refined/edible oils in India cost up to Rs 55-70/l on an average as compared to the oral mouth rinses which cost up to Rs 30-40/100 ml. On Comparison of cost per rinse, oil-pulling is more cost effective and equally effective method for maintaining oral hygiene.9

**Time required:** Oil pulling procedure requires 10 to 15 minutes per day early in morning. In the hectic lifestyles, it is difficult to cope with time consuming process such as “oil pulling.”9

**Conclusion**

Oil pulling/swishing is an ancient *Ayurvedic* method used to maintain oral health. Scientific evidence suggests that oil pulling can significantly reduce plaque and gingival indices by means of reduction in microbial counts.8,10 This is an inexpensive method that can be successfully adopted by people belonging to all socioeconomic strata. However, this technique is not well-publicized and known to
general population. Advocating this easy procedure using household cooking oils can help in reducing the incidence of microbial dental and oral diseases, thus, reducing the morbidity associated with oral conditions.

References


