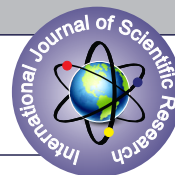


COCONUT OIL PULLING AS AN ADJUNCT TO SCALING AND ROOT PLANING: A DOUBLE BLIND COMPARATIVE CLINICAL STUDY



Dental Science

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ABSTRACT

Oil pulling is an Indian folk remedy with both systemic and dental benefits ranging from strengthening of teeth, gums and jaws, preventing decay, oral malodor and bleeding gums. However, there is limited scientific data illustrating the role of oil pulling as an adjunct to Scaling and root planing. The aim of this study was to evaluate the anti-plaque effect of coconut oil pulling and its influence on plaque induced gingivitis as compared to chlorhexidine mouth wash. Forty five patients with plaque induced gingivitis were treated with scaling and root planing following this randomly fifteen patients performed oil pulling procedure for 14 days (test) and fifteen patients used Chlorhexidine mouthwash for 14 days (control) and fifteen patients were given normal saline (Placebo). Plaque scores using Plaque index, Gingival Index were assessed at baseline and after 14 days. Furthermore patient acceptance from either group was evaluated using a questionnaire. Coconut oil pulling therapy showed a reduction in the plaque index scores, gingival index scores, in patients with plaque-induced gingivitis in adjunct with scaling and root planing.

KEYWORDS

Oil pulling, Plaque-induced gingivitis, Scaling & Root planing, Coconut oil

INTRODUCTION

Oral health and general health are interrelated, and hence, it is very important to maintain oral health.¹ Gingivitis is an inflammatory process which causes irritation, redness, and swelling of gingiva. Supragingival plaque control measures are considered most effective to prevent gingivitis and its further progression to periodontitis by maintaining dental health.²

Apart from the usage of mechanical tooth cleaning to maintain oral health, research has focused on chemotherapeutic agents such as mouthwash containing chlorhexidine as an adjuvant to reduce plaque formation in the oral cavity. However, these chemotherapeutic agents have certain undesirable adverse effects which have led to several other alternatives, among which oil pulling procedure is one of the alternatives which can readily be made available in the household.

Oil pulling or oil swishing is an old age process mentioned in *Charaka Samhita* and *Shushruta's Arthashastra*. Oil pulling has been used extensively as a traditional Indian folk remedy for many years to prevent decay, oral malodor, bleeding gums, dryness of the throat, and cracked lips and for strengthening teeth gums and jaws.³

The use of Oil pulling was popularized by Dr F. Karach⁴ and he claimed the use of oil pulling to cure oral diseases; however, it was not supported by evidence.

Oil pulling is preferably done in the morning on empty stomach, the oil is taken in the mouth, sipped sucked and pulled between the teeth for 10-15 minutes, the oil turns thin and milky white. The oil should not be swallowed as it contains bacteria and toxins. Oil pulling therapy should be followed by tooth brushing.⁵

MATERIALS AND METHODS

Subject selection:

This comparative clinical study was carried out at the Department of Periodontology and Implantology, College of Dental Sciences and Research Centre. The subjects were selected from the Outpatient Department of Periodontics. Study protocol was explained to each potential subject.

The study included forty-five systemically healthy patients with plaque induced gingivitis. Patients were randomly divided equally into three groups which were Test group consisting of Scaling and root planing along with coconut oil pulling (COP) and Control group consisting of Scaling and root planing along with Chlorhexidine mouthwash (CHX) and a Placebo group consisting of Scaling and root planing along with normal saline.

INCLUSION CRITERIA:

1. Subjects with plaque induced gingivitis.
2. Subjects having at least 20 permanent natural teeth.

EXCLUSION CRITERIA:

1. Use of antibiotics or mouthwash in the past 3 months.
2. Pregnancy/Lactating women
3. Smokers (Past and current)
4. Children below age of 15 years.

Following clinical parameters were assessed at baseline and at 14 days:

1. Plaque Index (PI) of Loe and Silness 1967
2. Gingival Index (GI) Of Silness and Loe 1963
3. A common, self-administered questionnaire to evaluate patient acceptance (After 14 days follow up).

All clinical measurements were made at four sites per tooth: mesio-facial, mid-facial, disto-facial, palatal/lingual by the same examiner.



Fig 1: Materials used.

Study Design

- The study performed was a randomized clinical trial.
- Each subject was assigned a specific number and simple random sampling was done using a table of random numbers.
- All subjects were treated with Scaling and root planing with ultrasonic instrumentation and appropriate oral hygiene instructions were given followed by measurements of baseline Plaque scores and Gingival index scores.
- The test group was instructed to perform oil pulling with coconut oil, one tablespoon on an empty stomach first thing in the morning for the next 14 days. Placebo group was instructed to perform same procedure with normal saline.
- The Control group were instructed to rinse with 0.2% CHX mouthwash for 30 seconds, twice a day for next 14 days.
- Coconut oil, Chlorhexidine mouth wash & normal saline was provided to them for the next 14 days.
- The participants of all the groups were instructed to brush their teeth as per their daily home oral hygiene schedule.
- The pre and post procedural values of the plaque and gingival index and scores were compared.
- At the end of 14 days, patient acceptance of Oil pulling as well as Chlorhexidine mouthwash from either group was evaluated using a common, self-administered questionnaire.

COCONUT OIL PULLING AS AN ADJUNCT TO SCALING AND ROOT PLANING

SAMPLE NO: _____

QUESTIONNAIRE

YES/NO & COMMENT

1. HOW MANY TIMES IN A DAY HAVE YOU USED THE GIVEN SAMPLE?

2. IN THE LAST 14 DAYS HAVE YOU EVER FORGOTTEN TO USE THE GIVEN SAMPLE?

3. DID YOU EXPERIENCE ANY ALTERED TASTE AFTER USING THE SAMPLE?

4. IS THERE ANY TINGLING BURNING SENSATION IN THE MOUTH AFTER USING THE SAMPLE?

5. HAVE YOU EXPERIENCED ANY PROBLEM WITH THE TASTE OF MEDICATION?

6. ANY EFFECT YOU HAVE FELT ON MOUTHBREATH AFTER USING THE GIVEN SAMPLE?

7. WOULD YOU LIKE TO CONTINUE TO PERFORM THE PROCEDURE AS PART OF YOUR ORAL HYGIENE REGIMEN?

Fig 2: Questionnaire used to evaluate patient acceptance

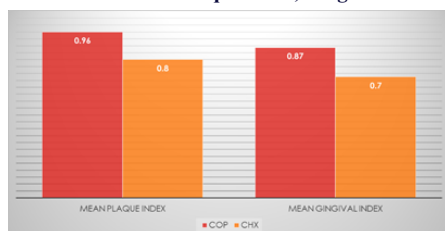
RESULTS

Table 1 shows the mean scores of Plaque index, Gingival index at baseline and after 14 days follow up. Mean scores of Plaque Index was 1.76 for the test group and 1.69 for the control group while the Gingival Index score for the test group and the control group was 1.60 and 1.57 mm respectively. Results showed that the Plaque score reduced to 0.8 in test group and 0.89 in control group, whereas the Gingival Index score was seen to reduce to 0.73 in test group and 0.87 in control group as depicted in graph 1.

Table 1. Mean scores of Plaque Index, Gingival Index at baseline and after 14 days follow up

Group	Test Group (COP)				Control Group (CHX)			
	Baseline	14 days follow up	Mean difference	Mean difference	Baseline	14 days follow up	Mean difference	Mean difference
Plaque index	1.76	0.8	0.96	51.6 %	1.69	0.89	0.8	47.61 %
Gingival index	1.60	0.73	0.87	53.37 %	1.57	0.87	0.7	44.58 %

Graph No.1 Mean scores of Plaque index, Gingival index



Patient acceptance: Patient acceptance was evaluated through a survey in the form of a questionnaire that contained common questions for both the test group (CHX) and the control group (COP) Fig 2. As depicted in Fig 3 around 80% of patients from CHX group complained of burning sensation while none of the patients in COP group had any such discomfort. Altered taste was also highlighted by 60% patients of CHX group as opposed to only 20% patients of COP group who basically complained of the oily-bland taste rather than any taste alteration or altered taste. Even where compliance was concerned 80% patients of COP group showed better compliance as opposed to 60% of CHX group. The probable reason could be the once daily format for oil pulling. Finally 60% of patients on Oil pulling –test group were willing to continue the regimen but we cannot advocate the same for Chlorhexidine users-control group.

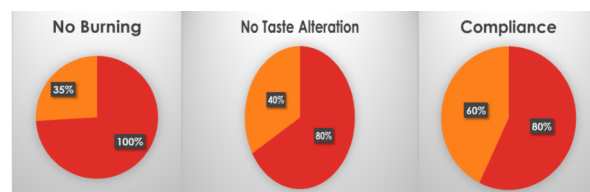


Fig 3 Representation of result of patient acceptance



DISCUSSION

Oil pulling is a traditional remedy which is not widely practised, furthermore it lacks scientific basis. Through this study we can evaluate if oil pulling can be developed as an oral hygiene habit through its effect on plaque and gingivitis.

Chlorhexidine “The gold standard” mouthwash was used as the control in this study to assess and compare the effect of oil pulling therapy on plaque-induced gingivitis.

In a study by Thaweboon⁶, it was found that coconut oil exhibited antimicrobial activity against *S. mutans* and *C. albicans* whereas sesame oil had activity against *S. mutans* and sunflower oil showed only antifungal activity. Other oils such as corn oil, palm oil, rice bran oil and soy bean oil showed no antimicrobial activity against tested microorganisms.

Chalke⁷ et al conducted a trial on the effects of coconut oil pulling. Results showed a significant decrease in pre and post-treatment scores of plaque and gingival index and they concluded that coconut oil pulling can be used as an adjunctive oral hygiene aid in subsequent plaque-induced gingivitis.

A study by Peedikayil⁸ was done to assess the effect of coconut oil pulling on plaque formation and plaque induced gingivitis. Results showed statistically significant reduction in the plaque and gingival indexes. It concluded that coconut oil pulling could be used as an efficient supportive therapy in plaque induced gingivitis.

A study conducted by Asokan et al showed a definitive reduction in *Streptococcus mutans* count in plaque and saliva after oil pulling therapy. So oil pulling therapy has shown to reduce the incidence of dental caries⁵. Another study by Asokan et al showed that oil pulling therapy was very effective against plaque induced gingivitis both in clinical and microbiological assessment.³

The actual mechanisms behind oil-pulling therapy is not known yet. It has been assumed that the plaque aggregation and bacterial adhesion on the tooth surface can be inhibited by the high viscosity of coconut oil.⁹ Moreover, the monolauric and monocapric acids present in the oil has the tendency to penetrate cell membranes and eventually kills the harmful pathogens by inhibiting the enzymes utilized in energy production and nutrient transfer.⁶ Another probable mechanism might be due to the alkali hydrolysis of oil by the presence of bicarbonates in saliva known as the saponification process.¹⁰

Furthermore, the third theory hypothesizes that the antioxidants present in the oil cause detoxification by preventing lipid peroxidation, resulting in an antibiotic-like effect thus helping in the destruction of microorganisms.¹¹

CONCLUSION

There are no disadvantages for oil pulling therapy except for the extended duration of the procedure compared with chlorhexidine. Coconut oil has the following advantages over chlorhexidine: no staining, no lingering after-taste, and no allergy. Coconut oil is 5 to 6 times more cost effective than chlorhexidine and is readily available in most households. Extensive studies with larger samples, varying time periods, and long follow-up times should be carried out to establish the efficacy of oil pulling therapy in prevention of plaque-induced gingivitis. More studies with coconut oil can open new doors in the field of research in oral health care.

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