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Original article

Comparison of efficacy of alternative medicine with allopathy in treatment of oral fungal infection



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ABSTRACT

This clinical study assessed and compared the efficacy of tea tree oil (TTO), an alternative form of medicine, with clotrimazole (i.e., allopathy) and a conservative form of management in the treatment of oral fungal infection.

In this interventional, observational, and comparative study, we enrolled 36 medically fit individuals of both sexes who were aged 20–60 years old. The participants were randomly assigned to three groups. Group I was given TTO (0.25% rinse) as medicament, Group II was given clotrimazole, and Group III was managed with conservative treatment. The results were analyzed from the clinical evaluation of lesions, changes in four most common clinical parameters of lesions, and subjective symptoms on periodic follow-up. Based on the results, the percentage efficiency of the two groups were taken and compared through a bar graph on the scale of 1.

No toxicity to TTO was reported. Group I (TTO) was found to be more efficient than the other two groups, as changes in four parameter indices of lesions were noted, and results for all three groups were compared on a percentage basis.

The study concluded that TTO, being a natural product, is a better nontoxic modality compared to clotrimazole, in the treatment of oral fungal infection and has a promising future for its potential application in oral health products.

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1. Introduction

Tea tree oil (TTO) is derived from the paper bark tea tree, which belongs to the family of Myrtaceae; it belongs to two genera, *Lep-tospermum* and *Melaleuca*.¹ TTO medications have been used for thousands of years by Australian aborigines both internally and externally for alleviation of pain and promotion of wound healing, cure colds, and influenza. Although tree tea oil is used around the world in a small number of cosmetic and medicinal products, its use as an ingredient of oral health care products remains limited. 1,8-Cineole and terpinen-4-ol are the main active ingredients of TTO.^{2–4} TTO is a uniquely defined combination of monoterpenes, sesquiterpenes, and terpene alcohol with outstanding therapeutic

properties. It is recognized as having broad-spectrum antibacterial,⁵ antiviral (Carson et al 2005)⁶, antimycoplasmal, and anti-protozoal activities (Furneri et al, 2006)⁷, as well as anti-inflammatory (Finlay-Jones et al 2001)⁸ and anticancer properties (Greay et al 2010).^{9,10} It acts by damaging the microorganisms' cellular membrane and subsequently denaturing the cell contents.⁵ Anecdotal, TTO is known as an excellent treatment for fungal infections, in particular, vaginal candidiasis and dermatophytoses, but relative data showing its oral antifungal property is rather sparse.^{11–13}

1.1. Aims and objectives

The potential usefulness of TTO in oral health care products has not been assessed, and hence, through this study, our aim was to assess and compare the efficacy of TTO as an alternative form of medicine with clotrimazole (i.e., allopathy) and a conservative form of management in the treatment of oral fungal infection. Our objective was to create directly comparable and quantitative

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antifungal data for TTO, for which little literature data exist and which can be a useful addition to the current range of oral anti-fungal drugs.

2. Materials and methods

The Maharaj Vinayak Global University (MVGU) Research Ethics Committee gave ethical approval for the study. Patients visiting the Oral Medicine Department of Jaipur Dental College, Kukas, India were screened for oral fungal infection. Fungal infection included: (1) leukoplakia superimposed candidiasis, (2) denture-induced candidiasis, and (3) pseudomembranous candidiasis. The most common presenting clinical features of the above-mentioned fungal infections included erythema (sign), burning sensation (symptom), inflammation (sign), and fungal hyphae (pathological) as suggested in the literature.^{8–10} The efficiency of the three groups was compared on the basis of four parameter indices that were selected based on the most common clinical features of fungal infection mentioned so far in the literature.

The inclusion criteria called for male and female participants who were: (1) willing to cooperate, (2) available for regular follow-up, and (3) within the age group of 20–60 years. The exclusion criteria included patients who were: (1) uncooperative, (2) on antifungal medication, (3) HIV-positive, (4) known to have critical diseases (e.g., leukemia and lymphoma), (5) undergoing radiation therapy, and those (6) who discontinued the medication and follow-up and (7) have reported side effects from TTO. Histopathological smear of the lesion and the prosthesis used were taken to confirm the diagnosis of fungal infection. Patients diagnosed with fungal infection were randomly divided into (1) TTO group, (2) Allopathy group (i.e., clotrimazole), and (3) Conservative group, based on the treatment to be carried out.

Evaluation of lesion was done on the basis of four parameter indices: (1) erythema; (2) visual analog scale, burning sensation; (3) inflammation; and (4) fungal hyphae pretreatment. Complete medical, drug, and any allergy history were noted for selected patients, and any subjective and objective symptoms associated with the lesion were also recorded. Prestructured performa was filled with all the above details and with specific emphasis on the frequency of use of prosthesis and its maintenance.

After the confirmation of the diagnosis, treatment was started, and those patients who were willing to undergo treatment signed a consent form. During their first visit, participants selected for treatment with Group I were instructed to perform on-spot rinse with TTO and were placed on a 24-hour observation for any toxic effect from the essential oil. The participants were handed a pamphlet that outlined the use of TTO, in the form of a rinse (diluting 5 ml oil/50 ml water – concentration 0.10%) to be done thrice daily until the first follow-up (after a meal). Patients were instructed not to eat/drink anything until 30 minutes after rinsing. Patients selected for treatment under Group II (Allopathy) had to apply clotrimazole ointment thrice daily after meals until the first follow-up. Under Group III (conservative management), participants were asked to carry out regular cleaning and washing of the prosthesis on a daily basis and removal of prosthesis during the night in case fungal infection turned out to be denture-induced. The participants were asked to refrain from using proprietary mouthwashes during the study, and no auxiliary cleaning aids were allowed to be used during the course of the study. Medication was distributed to the participants in labeled (A, TTO; B, Allopathy) dispensing bottles. The participants were not aware of the contents of these bottles.

Follow-up was carried out after the 1st week, 2nd week, and 3rd week to evaluate the subsequent changes in the lesion on the basis of the four parameter indices (Fig. 1A–C). On the recall visit, any changes in clinical features associated with lesions were noted.

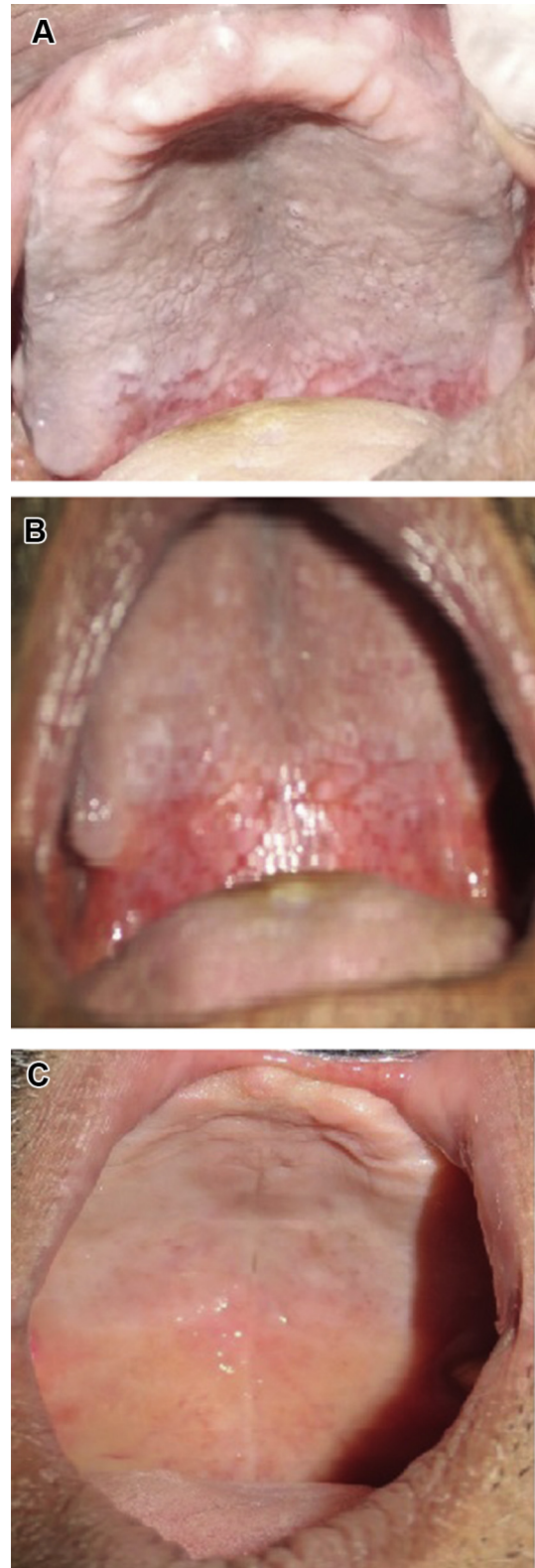


Fig. 1. (A) Fungal infection in the palatal region – pre treatment. (B) First visit – After 1 week erythema & burning sensation reduced – Tea tree oil treated. (C) Second visit – After 2 weeks complete relief.

Patient performa posttreatment was filled up again, and the medication was continued if any symptoms and signs of the lesion persisted. No patient reported any adverse effects in relation with the oil. The recorded data were preserved for analysis of results.

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