



# Tea Tree Oil

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**T**ea tree oil is the essential oil steam-distilled from the Australian plant, *Melaleuca alternifolia*. This species is unique to Australia and native to New South Wales.

Tea tree oil contains over 100 components, mostly monoterpenes, and the main active ingre-

dient is terpinen-4-ol. It is a colourless or pale yellow oil and has a rich odour.

It is touted by the health food industry as a cure-all for all kinds of dermatologic diseases. Tea tree oil demonstrates antimicrobial activity against a wide range of Gram-positive and Gram-negative bacteria, fungi and viruses both, *in vitro* and *in vivo*.

## What do the studies show about its uses?

### Onychomycosis

- Sixty patients were treated for 16 weeks in a randomized, double-blind, placebo-controlled study, which incorporated 2% butenafine hydrochloride and 5% tea tree oil in a cream for the treatment of toenail onychomycosis. Eighty per cent of these patients were cured, while none were cured in the placebo group ( $P < 0.001$ ). Four patients in the active treatment group experienced subjective mild inflammation without discontinuing treatment. The study concluded that the topical cream therapy, in combination with nail-clipper debridement, is safe, tolerable and significantly more effective than placebo to cure toenail onychomycosis.
- Another double-blind, randomized, controlled trial compared the twice daily topical application of 1% clotrimazole solution to 100% tea tree oil for onychomycosis. Debridement and clinical assessment were performed at zero, one, three and six months. After three months of therapy, the two treatment groups were comparable based on a culture-assessed cure (clotrimazole = 11%; tea tree oil = 18%; no significant difference). After six months, about half of each group reported continued improvement or resolution (clotrimazole = 55%; tea tree oil = 56%; no significant difference). The study concluded that tea tree oil improved nail appearance and symptomatology as effectively as clotrimazole.

### Oral hygiene

- A range of oral bacteria are susceptible to tea tree oil, suggesting that it may be useful in oral

health-care products and in the maintenance of oral hygiene. A study compared the antimicrobial activity of tea tree oil, garlic and chlorhexidine gargle solutions against oral micro-organisms. Thirty participants were randomly divided into groups that received 0.12% chlorhexidine, 2.5% garlic and 0.2% tea tree oil. The chlorhexidine and garlic groups showed antimicrobial activity against mutans streptococci, but not against other oral micro-organisms. The tea tree oil group showed antimicrobial activity against both mutans streptococci and other oral micro-organisms. The study concluded that garlic and tea tree oil might be an alternative to chlorhexidine.

### Oral candidiasis

- Jandourek *et al.* evaluated the efficacy of melaleuca oral solution in AIDS patients with fluconazole-resistant oropharyngeal candida infections. Twelve patients were given 15 mL melaleuca oral solution, four times daily, to swish and expel for two to four weeks. At the four-week evaluation, eight of the 12 patients showed a response (two were cured and six improved), four were non-responders and one had deteriorated. A mycologic response was seen in seven of 12 patients. The study concluded that melaleuca oral solution appears to be effective as an alternative regimen for AIDS patients with oropharyngeal candidiasis refractory to fluconazole.
- Another study evaluated the efficacy of alcohol-based and alcohol-free melaleuca oral solution in patients with AIDS and fluconazole-refractory oropharyngeal candidiasis. Twenty-seven patients were randomized to swish and expel either alcohol-based or alcohol-free melaleuca oral

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solution, four times daily, for two to four weeks. Sixty per cent of patients demonstrated a clinical response to melaleuca oral solution at the four-week evaluation. The authors concluded that melaleuca oral solution appears to be an effective alternative regimen for patients with AIDS suffering from oropharyngeal candidiasis refractory to fluconazole.

### *Tinea pedis*

- One hundred fifty-eight patients with interdigital *tinea pedis* were randomized to receive either placebo, 25% or 50% tea tree oil solution, twice daily, for four weeks. A statistically significant improvement was seen in the clinical score in 68% of the 50% tea tree oil group and 72% of the 25% tea tree oil group, compared to 39% in the placebo group ( $P < 0.005$ ). Twenty-five per cent tea tree oil was associated with fewer complications than 50% tea tree oil solution. Four (3.8%) patients applying tea tree oil developed moderate to severe dermatitis that improved quickly after stopping the study medication.


- A cream with 10% tea tree oil was clinically as effective as 1% tolnaftate in reducing clinical signs of *tinea pedis* in 104 patients over four weeks, but had no greater fungicidal activity than placebo cream.

### Herpes labialis

- A poor quality randomized, placebo-controlled, single-blind study evaluated topical tea tree oil in the treatment of recurrent herpes labialis. Double-blinding was not attempted because of the distinctive odour of tea tree oil. The study consisted of patients with self-reported histories of recurrent labialis. Patients were randomized to receive either 6% tea tree oil in an aqueous gel base ( $n = 10$ ) or placebo gel ( $n = 10$ ) applied five times daily. The median time to re-epithelialization after treatment with tea tree oil was nine days, compared with 12.5 days after placebo (not significantly different). The study concluded that tea tree oil was no more effective than placebo for treating herpes labialis.

## Caution

While tea tree oil can be applied to minor cuts and scrapes, use caution for more extensive areas of broken skin or areas affected by rashes not due to fungus. The oil may burn if it comes into contact with the eyes, nose, mouth or other tender areas. Tea tree oil can cause dermatitis, and some people have allergic reactions, including rashes and itching, when applying tea tree oil. For this reason, only a small amount should be initially applied.

Tea tree oil probably should not be used during pregnancy and breast-feeding. Avoid taking tea tree oil internally; it can cause gastrointestinal upset and can be toxic at small doses. There have been reports of potentially fatal central nervous system depression (excessive drowsiness, sleepiness and coma). Keep tea tree oil out of the reach of children. 

*Dr. Borins would like to acknowledge CAMline for their help with the article ([www.camline.org](http://www.camline.org)).*

### Resources

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6. Satchell AC, Saurajen A, Bell C, et al: Treatment of interdigital *tinea pedis* with 25% and 50% tea tree oil solution: A randomized, placebo-controlled, blinded study. *Australas J Dermatol* 2002; 43(3):175-8.

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