

Allergic Contact Dermatitis Due to “Therapeutic Uses” of Tea Tree Oil on the Lips and Toenails

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PRECÍS

We report 2 cases of contact dermatitis caused by tea tree oil (TTO); both patients used on the injured skin pure oil, which underwent a probable oxidative degradation after some time.

DISCUSSION

A 52-year-old non-atopic woman developed an acute erythematous-edematous perioral reaction 9 days after topical use of pure TTO to treat angular cheilitis (Fig. 1A). The dermatitis healed with fusidic acid/betamethasone valerate topical cream.

Afterward, patch tests were performed with the Italian standard SIDAPA (Italian Society of Allergological, Occupational and Environmental Dermatology; <http://www.sidapa.org>) series, an integrative cheilitis series, the TTO 5% commercial allergen (Chemotechnique Diagnostics, Malmö, Sweden), and the diluted used product (50% petrolatum), on Van der Bend Chambers (Van der Bend, Brielle, the Netherlands). Patch tests were applied under occlusion on the patient's back for 2 days; readings were performed on day 2 (D2) and D4.

The patient showed positive reactions to nickel (++D2/++D4), to used product 50% petrolatum (++D2/++D4), and to commercial TTO 5% (+D2/++D4; Figs. 1B, C).

Another patient, a 48-year-old atopic woman, applied pure TTO for a supposed big toe onychomycosis. After 3 weeks, she presented acute periungual eczema on the first toe and on the medial surface of the second right toe (Fig. 2A).

Testing the Italian standard SIDAPA series, TTO “as is” (pure used product) and diluted to 2% and 5%, we obtained positive results for fragrance mix I (++D2/++D4), pure TTO (++D2/++D4), used product diluted to 2% (++D2/++D4), and used product diluted to 5% (++D2/+++D4; Fig. 2B).

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As we discussed in our recent articles, natural essential oils are currently proposed as a panacea to treat almost any disease and body site.^{1,2} Among all essential oils, TTO has been responsible for the most allergic reactions reported in the literature, since the first cases were described in 1991. This is because this essential oil is gaining popularity in Europe and North America.^{3,4}

It comes from leaves' distillation of the Australian native *Melaleuca alternifolia* or tea tree. It seems that the name “tea tree” was attributed to this plant by C. James Cook, a discoverer of Australia, who obtained an infusion similar to a spiced tea.

Today, the essential oil is used everywhere as a natural antimicrobial and anti-inflammatory. Even in a monograph of the European Medicines Agency, it is considered suitable for the treatment of superficial wounds, insect bites, stomatitis, athlete's foot, furuncles, and mild acne. Tea tree oil is composed of more than 220 chemical components.⁴



Figure 1. A, Acute erythematous-edematous perioral reaction due to neat TTO, used to treat angular cheilitis. B and C, Results of patch tests in the first patient at D4.



Figure 2. A, Acute periungual eczema of the first right toe and the medial surface of the second right toe after topical use of a pure TTO as an antifungal for toenails. B, Results of patch tests in the second patient at D4.

Fresh oil is a weak allergen, but its composition changes after oxidative degradation (from exposure to light, oxygen, and heat), and its sensitizing capacity becomes approximately 3 times stronger.^{1,4,5}

Chemotechnique (<http://www.chemotechnique.se>) markets oxidized TTO 5% for patch tests.

Many reports of allergic contact dermatitis to TTO have been described, and when tested routinely, the prevalence of positive reactions reaches up to 3.5%. Approximately three-quarters of cases are attributed to the use of neat oil or that in concentrated forms, particularly on the injured skin.^{4,5}

Since 2002, the European Cosmetic and Perfumery Association has recommended TTO be used in concentrations of than 1% in cosmetics, use in association with antioxidants, and use of specific packaging to minimize exposure to light.⁴

ZEBRA

Not the essential TTO oil itself, but processing methods and usage habits make it a strong allergen, especially when it is used with therapeutic aims on damaged skin.

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Cross-Elicitation to Spiramycin in a Patient With Airborne Allergic Contact Dermatitis to Tylosin

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PRÉCIS

We report a rare case of cross-elicitation to spiramycin in a patient with airborne allergic contact dermatitis (ACD) to tylosin.

DISCUSSION

We previously described a 67-year-old White woman (a retired teacher) with patch test–proven airborne ACD to tylosin antibiotic powder (1+ reaction to Tylan at 48 and 72 hours), which was used as an additive to her pet's dog food.¹ A second round of patch testing was performed to study cross-elicitation to other macrolide antibiotics: erythromycin base 10%, spiramycin base 10%, clarithromycin 10%, and pristinamycin 10% (drug eruption series, Chemotechnique Diagnostics). Our patient did demonstrate patch test reactivity to 1+ spiramycin but not to the other 3 macrolide antibiotics (Fig. 1). She had no history of prior exposure to any of these 4 macrolide antibiotics.¹ It would be of interest to patch test carbomycin A because of structural similarity to tylosin. Carbomycin A and tylosin are both 16-member macrolides, and both contain disaccharides at the C5

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