

Recurrent allergic contact dermatitis due to allergen transfer by sunglasses

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Tea tree oil (*Melaleuca* oil) is an essential oil, distilled predominantly from the leaves of the Australian plant, *Melaleuca alternifolia*. This species is unique to Australia and native to New South Wales. Allergic contact dermatitis to tea tree oil is well recognized and is becoming increasingly common in Australia (1, 2).

Key words: shampoo; tea tree oil.

Case Report

A 38-year-old woman presented with a 12-month history of intermittent eyelid dermatitis. She had a history of scalp psoriasis and no history of atopy. She was patch tested to an extended European standard series (Chemotechnique Diagnostics, Malmö, Sweden) cosmetic series, ingredients of creams and a variety of her own samples, appropriately diluted, applied in Finn chambers[®] on Scanpor[®] (Epitest OY, Tuusula, Finland). Patches were applied for 48 hr, and readings were taken on day (D) 2 and D4. On D4, there were positive results to nickel (++ – of old relevance), tea tree oil (+) and scrapings from the frame of her sunglasses (+). The patient was using a shampoo containing tea tree oil. Allergen avoidance advice was given. The sunglasses were made of plastic, and testing with dimethylglyoxime 1% (Chemo-Nickel Test[®]; Chemotechnique Diagnostics, Malmö, Sweden) confirmed that there was no nickel present. The patient had previously applied pure tea tree oil to acne papules for its medical benefits. The rash resolved with avoidance of the shampoo and the sunglasses but flared within 48 hr of recommencing wearing the glasses. The glasses were thor-

oughly cleaned with soap and water and were worn again. The rash has not recurred since the glasses have been washed. The patient frequently placed her glasses on her wet hair when driving to work in the mornings, and it was assumed that sufficient residue of the tea tree oil shampoo was transferred to the sunglasses, precipitating the recurrent flares in her eyelid dermatitis, even after the shampoo was no longer used.

Discussion

Allergic contact dermatitis to tea tree oil has been reported in cosmetics (3) and medicaments (4). Tea tree oil has also been reported to cause airborne contact dermatitis (5), immediate systemic hypersensitivity reactions after cutaneous contact (6), an allergic contact dermatitis with an erythema multiforme-like id reaction (7) and linear immunoglobulin A disease (8). Since 1996, there has been an agreed international standard for the constituents of tea tree oil (9). Frequency of sensitization to tea tree oil appears to be increasing, probably because of the widespread use of tea tree oil in 'medicinal' and 'natural' products. Potential allergens among the components of tea tree oil include 1,8-cineole (5), D-limonene, α -terpinene, aromadendrene, terpinene-4-ol, α -phellandrene, s-cymene, α -pinene, terpinolene (1) and α -terpinene (10). More recent work suggests that oxidation products are the more likely allergens (11). It is recognized that oxidized tea tree oil is a more potent allergen than fresh tea tree oil, and it has been suggested that one way to reduce rates of sensitization is to minimize exposure to old, oxidized tea tree oil (12).

This case highlights the importance of rinse-off hair products as a cause of eyelid dermatitis. It also illustrates the possibility of increasing amounts of allergen being deposited as a residue on objects worn close to the skin, prolonging the contact dermatitis or precipitating recurrent flares. If the allergy to tea tree oil, and hence the shampoo, had gone undetected, then the sunglasses would have been the main suspect agent. We feel that previous exposure to pure tea tree oil is an important risk factor in future development of sensitization.

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