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Systemic contact dermatitis related to alcoholic beverage consumption

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Abstract
Systemic contact dermatitis is a rash secondary to systemic exposure to allergens after sensitization. Numerous agents are implicated including Balsam of Peru, a plant-derived compound often used for flavoring and fragrance. Alcoholic beverages can contain many possible allergens, including cinnamon, vanilla, citrus peels, and Balsam of Peru. Herein, we describe two patients presenting with recurrent, diffuse, erythematous, and pruritic cutaneous eruptions suspicious for contact dermatitis. Based on clinical history, exam, and formal and at-home patch testing results, we believe the most likely etiology was Balsam of Peru within the alcohol beverages leading to systemic contact dermatitis. Both patients markedly improved after avoidance of their alcoholic beverages. Overall, systemic contact dermatitis secondary to alcohol consumption is a rare phenomenon, whereas Balsam of Peru is a relatively common allergen. Suspicion must be high to identify possible allergens (including Balsam of Peru) exposure within alcoholic beverages such as artificial flavorings, aromas, and mixtures.

Keywords: Balsam of Peru, systemic contact dermatitis, alcohol, ingestion, patch test

Introduction
Systemic contact dermatitis (SCD) is a cutaneous eruption secondary to systemic exposure to allergens (e.g. inhalation, ingestion, or injection) after sensitization [1]. The dermatitis is believed to arise by means of hematogenous hapten transfer to the skin, resulting in a delayed-type hypersensitivity reaction (Type IV) driven by memory T cells [2]. Numerous agents are implicated in SCD, including Balsam of Peru (BoP), a plant-derived compound often used for flavoring and fragrance [3]. Alcoholic beverages can contain many possible allergens, including cinnamon, vanilla, citrus peels, and Balsam of Peru (BoP) [4]. Herein, we describe two patients with SCD secondary to alcoholic beverage consumption presumably related to BoP.

Case Synopsis
Case 1
A 68-year-old man presented for evaluation of a diffuse, erythematous, and pruritic rash involving his scalp, back, arms, trunk, and legs. The eruption was intermittently present for years. Prior treatments for presumed ACD were extensive, including fexofenadine, narrow-beam ultraviolet B, methotrexate, and mycophenolate mofetil. Two prior biopsies demonstrated eczematous dermatitis and peri-folliculitis (Figure 1). Prior patch testing was positive (1+ reaction) for BoP. Exposure history revealed nightly consumption of tequila with margarita mix. On examination, there were widespread erythematous, spongiform-appearing patches and papules (Figure 2).

The patient was advised to continue avoiding products containing BoP. He was also recommended to avoid tequila and margarita mix. Triamcinolone 0.1% ointment was prescribed for affected areas along with 1 week of prednisone taper. Home patch tests to tequila and margarita mix (performed after the prednisone taper) were positive compared to
control adhesive bandage (Figure 3). At four-week follow-up, he had marked symptom improvement and felt the best he had in years.

Case 2
A 77-year-old man presented for evaluation of an intermittently present erythematous, pruritic rash for two years. Some chronic lesions had thickened. Previously prescribed treatments included fluocinonide 0.05% cream, triamcinolone 0.1% cream, intramuscular prednisone, and even a 14-day course of oral prednisone. These treatments provided short-lived relief until recurrence. To eliminate possible allergens, he had replaced his home’s carpet with hardwood floors, reupholstered his furniture and car interior, used only fragrance-free and allergen-free soaps or detergents, and no longer used dyes or perfumes. Exposure history revealed nightly consumption of blended whiskey. On exam, numerous erythematous, scaly, and lichenified plaques of the forehead, posterior scalp, and volar wrists in addition to erythematous, excoriated, and spongiotic papules of the back were present.

He was maintained on fluocinonide 0.05% cream as needed to lichenified plaques. Formal patch testing was positive (1+ reaction) to BoP. The patient was advised to avoid BoP products, including whiskey which may contain BoP, and conduct at-home patch testing to his blended whiskey. He was also started on fluocinonide 0.05% cream.

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on azathioprine 50mg daily, which was eventually increased to 100mg daily. He had a positive home patch test to the blended whiskey compared to control adhesive bandage (Figure 4). At two- and four-month follow-ups, the patient had stopped drinking blended whiskey and reported marked improvement in his rash. Azathioprine was discontinued. Topical corticosteroids were used for flares.

**Case Discussion**

Balsam of Peru is difficult to avoid. It is derived from the bark of the tree *Myroxolobalsamum var. pereirae* and is among the most common allergens [5]. Owing to its 60-70% cinnamic composition (combination of cinnamic acid, cinnamal cinnamate, benzyl benzoate, benzoic acid, and vanillin), BoP smells of cinnamon and vanilla, which explains its widespread use in fragrance and flavoring, including alcoholic beverages [4, 6]. Typically, these liquors are spiced such as brandy, gin, whiskey, and rum (all of which may have anise, cloves, cinnamon, and vanilla), [6]. In our patient (Case 2), blended whiskey is likely to contain several compounds with BoP including cinnamon flavoring, citrus peel, and other spices.

In our first patient (Case 1), his SCD is likely related to BoP from the margarita mix, which contains natural and artificial flavoring and aromas. Tequila, unlike the other liquors previously described, is likely devoid of BoP as its aroma and flavoring comes from organoleptics (higher order volatile alcohols, methanol, esters, carboxyls, terpenes, and furans), [7]. However, his consumption of tequila always coincided with margarita mix, which is likely to contain BoP and the most likely cause of his SCD given his positive BoP patch test. His positive patch test to the tequila may be secondary to local irritant contact dermatitis. Alcohol-related SCD is very rare and less likely [8, 9].

**Conclusion**

Systemic contact dermatitis secondary to alcohol consumption is a rare phenomenon, whereas BoP is a relatively common allergen. Suspicion must be high in order to identify possible allergens (including BoP) exposure within alcoholic beverages such as artificial flavorings, aromas, and mixtures. At-home patch testing may be a way to assess allergic response.
Potential conflicts of interest
Dr. Feldman has received research, speaking and/or consulting support from a variety of companies including Galderma, GSK/Stiefel, Almirall, Leo Pharma, Boehringer Ingelheim, Mylan, Celgene, Pfizer, Valeant, Abbvie, Samsung, Janssen, Lilly, Menlo, Merck, Novartis, Regeneron, Sanofi, Novan, Qurient, National Biological Corporation, Caremark, Advance Medical, Sun Pharma, Suncare Research, Informa, UpToDate and National Psoriasis Foundation. He is founder and majority owner of www.DrScore.com and founder and part owner of Causa Research, a company dedicated to enhancing patients’ adherence to treatment. Dr. Cline and Mr. Ramachandran have no conflicts of interest to disclose.

References