

varieties of vermouth differ substantially in alcohol and sugar content, as well as color. The sweet variety typically has lower alcohol content, higher sugar content, darker color, and more herb and spice extract compared with the dry variety.⁴ Sweet vermouth is used in many cocktails consumed in the United States.⁴

ZEBRA

Clinicians should be aware of the potential for sweet vermouth to be a causative agent in ACS. Diagnosis of ACS and identification of specific causative agent(s) remain challenging.

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Contact Allergy to Cocamide Diethanolamine and Cross-reactions

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Cocamide DEA (diethanolamine or diethanolamide) (CDEA) and other related compounds appeared together as contact allergens in our patch testing center. Given structural similarities, we consider the possibility of cross-reaction (CR).

When counseling contact allergy patients about allergen avoidance, it is essential to identify chemical CR. For uncommonly tested

allergens, it is especially difficult to identify CR. However, when positive patch test reactions are identified between 2 closely related uncommonly tested allergens, the probability that this would occur by chance is unlikely. It is important that all CRs between less commonly tested allergens are reported.

Cocamide DEA is used as a foam booster in soap and shampoo products.¹ In our center between January 2014 and January 2016, positive patch test reactions were seen in 0.4% of 1128 patients tested to CDEA. Of these 1128 patients, 335 were simultaneously tested with lauramide DEA (LDEA) and cocamide MEA (monoethanolamine) (CMEA). Two of these patients tested 3+ to CDEA and 2+ to LDEA. One of these patients also tested 2+ to CMEA.

Cocamide DEA consists of DEA linked to a mixture of coconut fatty acids of various lengths (between 8 and 18 carbon) including 48.2% lauric acid (12 carbon), 18% myristic acid (14 carbon), 8.5% palmitic acid (16 carbon), 8% caprylic acid (8 carbon), 7% capric acid (10 carbon), 6% oleic acid (18 carbon), and small amounts of stearic and linoleic acids.²

Lauramide DEA consists of lauric acid plus diethanolamine, and therefore CDEA contains 48.2% LDEA. Thus, it is logical that CR would be found between these 2 substances. Cocamide MEA consists of a mixture of coconut fatty acids of various lengths linked to MEA. The cases previously mentioned suggest that individuals allergic to CDEA may cross-react with CMEA and have concomitant reactions with LDEA; however, the low frequency (0.6% and 0.3% of 335 patients, respectively) suggests that this level of CR may not be clinically significant. The low frequency of patients allergic to CDEA who have CRs with LDEA is especially surprising because they are 48.2% homologous. It appears that some patients allergic to CDEA are not allergic to the lauric acid fraction. On the other hand, both patients allergic to LDEA and the 1 patient allergic to CMEA tested positive to CDEA. If future data are comparable, this may indicate unidirectional cross-reactivity.

In a previous study of 25 patients allergic to CDEA, 11 were tested to MEA and DEA. Two of these patients tested positive to DEA and MEA.³ These data suggest that ethanolamines may be the allergens in this subgroup of patients allergic to CDEA. Combined with our reports of CRs among CDEA, LDEA, and CMEA, it is reasonable to consider that CR may occur among all ethanolamines. Future data will be needed to determine whether some or all of these CRs occur frequently enough to be clinically significant.

Our data suggest that patients allergic to CDEA may have CRs with LDEA and CMEA, but these CRs may not be common enough to be clinically relevant. However, it is possible that CR in the opposite direction may be more common, which would indicate unidirectional CR. The lack of data on less commonly tested allergens makes it difficult to assess CRs between them. Patch testing related chemicals that are less commonly tested can provide insight into less common contact allergy cross-reactors.

With more data on this potential CR, we can better counsel patients on allergen avoidance.

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Carmine Red: A Potentially Overlooked Allergen in Children

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PRECIS

We discuss allergic contact dermatitis to carmine red to highlight a potential emerging allergen in pediatric contact dermatitis.

DISCUSSION

A 4-year-old girl with a history of atopic dermatitis presented for evaluation of recurrent intermittent bouts of a generalized systematized dermatitis. On presentation, she was noted to have erythroderma with severe facial involvement and periorbital swelling (Fig. 1). Before referral, she had been treated with multiple courses of oral prednisolone because topical therapies were ineffective.

Preemptively, she was prescribed a hypoallergenic routine (with very limited personal care products) and tacrolimus 0.1% ointment, a 7-day course of prednisolone 15 mg every morning (0.8 mg/kg) was given, and she was patch tested 14 days after the last dose. She was patch tested to a modified 50-allergen pediatric series. At 48 hours, she was noted to have 2+ to carmine 2.5% petrolatum (pet), *p*-phenylenediamine 1% pet, and methylisothiazolinone 0.2% aqueous and 1+ to nickel sulfate 2.5% pet. At 96 hours, all of the previous reactions remained positive; 2+ reactions were also noted to tixocortol-21-pivalate 1% pet, compositae 6% pet, and disperse blue mix (124/106) 1% pet; and a 1+ reaction was noted to cobalt chloride 1% pet.

Postpatch evaluation revealed a clinically relevant source of carmine in many of the foods reviewed including candies, juices, and, most notably, red velvet cupcakes, which the patient's mother retrospectively connected to flares. The patient remained virtually free of her dermatitis over the following 18 months with vigilance



Figure 1. Child with severe facial involvement and periorbital swelling systemic contact dermatitis reaction.

in avoidance. She returned for evaluation of an episode of a systematized flare of her dermatitis that developed within 5 hours of drinking a fruit punch containing carmine red.

Carmine (cochineal extract) is derived from the dried and pulverized gravid cochineal insects, mainly *Dactylopius coccus*, which is a cultivated parasite on several species of prickly pear cactus. The extract has had historical importance as a dye used to impart a crimson color to wool, silk, and cotton. It was also used extensively in oil paints leading to “Titian red.” A recent resurgence in the demand for cochineal carmine has emerged with the piqued global interest in products free of artificial additives and dyes. Notably, carmine is used to color a wide range of pink-crimson to orange foods, for example, the red stripe on artificial crab meat, salami, sausages, juice, candies, and yogurt. To date, there have been at least 33 reported cases of immediate hypersensitivity reactions associated with carmine, many of which resulted in systemic anaphylaxis.¹ Catli et al¹ found an association between the consumption of foods containing carmine (eg, salami and gumdrops) and flares of atopic eczema in children with a history of atopic dermatitis. Conversely, there have been only 5 cases reported of delayed hypersensitivity to carmine, primarily to lipsticks.^{2–5}

PEARL

This case highlights the potential of carmine red to cause delayed-type hypersensitivity in children.

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