

Correspondence

Chemicals in moisturizers may promote type 2 inflammation and food allergy

To the Editor:

We read with great interest the article in the March 2021 issue of the *Journal of Allergy and Clinical Immunology* by Perkin et al,¹ which reported that frequent moisturizer use in infancy may promote the development of food allergy. Although the authors discuss many important putative mechanisms, we wish to bring another possibility to their attention. Contact allergens induce skin sensitization and allergic contact dermatitis. Such chemicals have been identified in 89% of 187 “hypoallergenic” and “dermatologist-recommended” pediatric cosmetic products, as well as in 88% of the 174 best-selling moisturizers in US surveys from 2013 and 2017,² and it is likely that many emollients contain at least 1 contact allergen (although most have only weak sensitizing potential).

Importantly, repeated cutaneous exposure to contact allergens results in an initial T_H1 cell-type response, followed by a gradual shift toward T_H2 cell dominance and atopic dermatitis-like inflammation in animal models. We have previously proposed that the significant increase in skin exposure to chemicals since the 1950s may have contributed to the increase in prevalence of atopic disorders; the “hapten-atopy” hypothesis.³ Even in subjects with existing T_H2 cell programming, exposure to contact allergens drives enhanced T_H2 cell inflammation. This is in sharp contrast to the T_H1 cell programming that is observed when normal skin is exposed to contact allergens.⁴ We endorse the view of Perkin et al¹ that use of moisturizers is likely to enhance access of food allergens encountered at skin surfaces to the viable epidermis, and that this in turn translates into an increased risk of food allergy. However, we propose that the elicitation of T_H2 cell-type responses to food allergens in this context will be promoted, in complementary fashion, by exposure to sensitizing chemicals in the moisturizers themselves. Notably, the example provided by Perkin et al¹ in their discussion of an agent whose absorption is enhanced by moisturizers, namely, the herbicide 2,4-dichlorophenoxyacetic acid, is itself a clinically relevant contact allergen/hapten.

Epidemiologic studies from North America have shown that epinephrine pen use and emergency room visits are more

common in northern latitudes than in southern latitudes. Although vitamin D may play a role, it is tempting to hypothesize that increased moisturizer use to treat dry skin may provide an alternative or additional explanation for these findings. Recent (disappointing) clinical trial data revealed no protective effect of emollient use in newborns for prevention of atopic dermatitis. These clinical trial data, together with data showing increased internal exposure to endocrine-disrupting chemicals in children with atopic dermatitis and children with frequent moisturizer use⁵ and the data in Perkin et al,¹ also argue against systematic and untargeted use of moisturizers in healthy newborns.

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