

Correspondence

What's in a kiss: Peanut allergen transmission as a sensitizer?

To the Editor:

The recent article by Maloney et al¹ quantitated Ara h 1 as a marker for peanut protein in saliva after ingestion of a peanut butter sandwich. Although this study investigated the risk of an allergic reaction, we hypothesize that cutaneous exposure to peanut-containing saliva in infants with eczema might induce allergic sensitization to peanut.

Sensitization to peanut allergen must precede a child's initial allergic reaction, which usually occurs on the first known oral exposure.² Epicutaneous contact has been suggested as a route of allergen exposure leading to sensitization.³ This concept is supported by a murine model in which an oral dose of peanut that would usually induce tolerance causes anaphylaxis when it follows application of peanut protein without adjuvants to a disrupted epidermal barrier.⁴

Up to 12 μ L of saliva can be transferred to an infant's forehead with a "big, affectionate kiss" (unpublished observation). Because Maloney et al¹ found that saliva contained up to 1110 μ g/mL Ara h 1, by extrapolation, a single kiss could transfer up to 88.8 μ g of peanut proteins in saliva. We confirmed, using immunoblotting, that Ara h 1 is present in saliva and readily transferred to a nitrocellulose membrane by kissing 5 minutes after eating a peanut butter sandwich (Figure 1).

Other possible vehicles for cutaneous exposure to peanut allergens seem less likely. Lack et al³ suggested peanut oil in therapeutic creams could induce sensitization. However, others examining these creams did not detect peanut allergen.⁵ Perry et al⁶ hypothesized that peanut allergen might remain on inanimate objects, such as tables, although Ara h 1 was not detected in these samples from schools. Interestingly, families of children who become allergic to peanut tend to consume more peanut than families with children without peanut allergy.⁷

Almost all children who have peanut allergy have an "oozing, crusted rash" during their first 6 months of life.³ Peanut protein was applied to tape-stripped epidermis,⁴ representing a similar epidermal barrier defect to eczema, to induce sensitization in the murine study. Saliva transmits an aqueous solution of antigen, but it is not known whether it increases protein allergenicity or contributes to epidermal barrier disruption. Although the dose of peanut protein required to sensitize an infant is not known, in the murine study skin was touched with cotton wool containing 100 μ g of peanut protein in solution.⁴

Peanut protein can be transferred to the skin of an infant by kissing, and we propose that this might be a route for peanut sensitization. This exposure could explain key features of peanut allergy: why allergic reactions occur on the first oral exposure to peanut,² the reported increased quantity of peanut consumed in households of children who become allergic to peanuts,⁷ and the association with eczematous skin rashes.³ We acknowledge that kissing is essential for a child's social and emotional development and do not advocate avoidance of kissing but

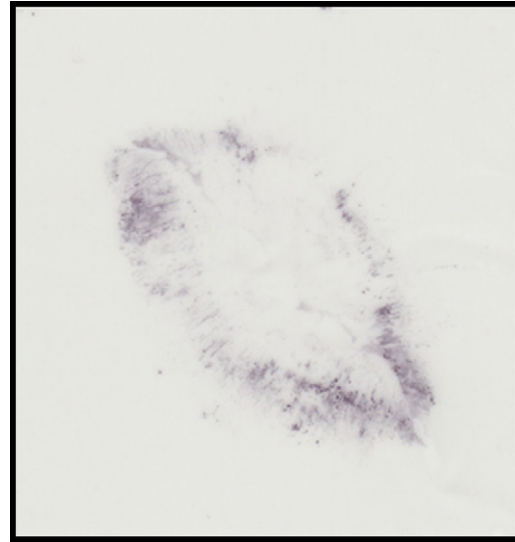


FIG 1. Binding of Ara h 1 mAb to the site of a kiss on a nitrocellulose membrane 5 minutes after ingestion of a peanut butter sandwich. A comparative kiss before ingestion of the sandwich did not bind Ara h 1 mAb (not shown).

caution against high-saliva-volume kisses soon after peanut consumption in infants with eczema.

Richard C. Nolan, FRACP^a

Maria P. de Leon, PhD^b

Jennifer M. Rolland, PhD^b

Richard K. S. Loh, FRACP^c

Robyn E. O'Hehir, FRACP, PhD^{a,b}

From ^athe Department of Allergy, Immunology and Respiratory Medicine, The Alfred Hospital, Melbourne, Australia; ^bthe Department of Immunology, Monash University, Melbourne, Australia; and ^cthe Department of Immunology and Allergy, Princess Margaret Hospital for Children, Perth, Australia. E-mail: rich@perthnolans.com.

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