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Results

About 32/38 (84%) of the products contained fragrance chemicals. The fragrance ingredients were not specified apart from in one lotion (a baby bath lotion that contained citronellol, geraniol, hexyl cinnamal, hydroxycitronellal, and isoeugenol). Formaldehyde was not present in any of the products. However, other preservatives had an extensive presence: 2-bromo-2-nitropropane-1,3-diol (11/38, 29%); imidazolidinyl urea (7/38, 18%), quaternium-15 (6/38, 16%), parabens (22/38, 58%), and phenoxyethanol (11/38, 29%). Other chemicals, with recognized haptenic potential, included disodium ethylenediaminetetraacetic acid (EDTA) (29/38, 76%), propylene glycol (19/38, 50%), and butylated hydroxytoluene (4/38, 11%).

Exposure to haptens/ contact allergens in baby cosmetic products

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J. M. L. White and J. P. McFadden

Department of Cutaneous Allergy, St John's Institute of Dermatology, St Thomas' Hospital, London SE1 7EH, UK

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We have recently proposed that hapten exposure (oral and topical) may promote the development of diseases related to atopy as defined by multiple protein allergies (1). As the first year of life may be important in the development of atopy, we have surveyed the qualitative hapten/contact allergen content of baby cosmetic products.

Methods

About 38 cosmetic products marketed for babies were identified in four major high street retailers. Prod-

ucts consisted of moist baby wipes, baby shampoo, baby moisturizing cream, baby oil, baby powder, baby bath lotion, and baby lotion. The ingredient listings of these products were used to identify the presence of recognized haptens/contact allergens (regardless of potency or prevalence).

exposure to haptens in the newborn (5, 6). Recent data suggest elevated tolerance to dietary haptens in atopic dermatitis (1), in contrast to the known strong association between childhood atopic dermatitis and food protein allergy [and by implication, loss of food protein tolerance (7)]. Furthermore, it is possible, in some circumstances, that haptenic signals on different epithelial surfaces, such as the skin and gastrointestinal tract, may synergize (8).

It is conceivable that haptens, by their known ability to bind to and alter protein/peptide configurations, may interfere with foreign and self-protein tolerance mechanisms and contribute to atopy and atopic disease. Modern environmental practices include artificial hapten exposure on different epithelial surfaces, including the gastrointestinal tract (such as formula milk, antibiotics, and food additives) and skin (in cosmetic products).

In summary, some animal models of atopic dermatitis are based on cutaneous hapten exposure at a young age. In a small survey of several baby cosmetic products, we have found the presence of haptens, but apart from some of the preservatives, they are of generally weak potency.

Comment

Numerous haptens were identified in baby cosmetic products. We do note, however, that there was only one product with well-characterized fragrance allergen chemicals identified, and some haptens either were at very low concentrations (e.g. disodium EDTA) or are weak allergens (e.g. phenoxyethanol).

Although the cause for the marked increase in atopic disease over the past 50 years remains unknown, a leading proposal is the hygiene hypothesis (2), whereby reduced exposure to microorganisms leads to defective maturation of the immune system, leading to atopic disease. A recent variant on this theme (3) is that excessive use of skin cleansing products on the newborn/baby's skin leads to a decrease in skin barrier function, allowing greater penetration of atopy-related proteins and an altered (Th2) immune response, in keeping with a genetic barrier skin defect being associated with atopic dermatitis (4). Another explanation may be the presence of haptens in such products. Two animal models of atopic dermatitis are based on repeated cutaneous

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Address:

J. P. McFadden
Department of Cutaneous Allergy
St John's Institute of Dermatology
St Thomas' Hospital
London
SE1 7EH
UK
Tel: +442 071 881613
Fax: +442 071 887473
e-mail: john.mcfadden@kcl.ac.uk