

WH2: Dermokosmetik

# Identification and testing of cosmetic contact allergens

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The most important allergenic culprits in cosmetics are fragrances and preservative agents.

Since routine patch testing with the fragrance mix, which contains 8 perfume components [amyl cinnamal, cinnamal, cinnamyl alcohol, hydroxycitronellal, eugenol, isoeugenol, geraniol, and Evernia prunastri (Oakmoss) extract] detects only part of all fragrance-sensitive individuals, testing with additional markers such as fragrance-mix II (hydroxyisohexyl 3-cyclohexene carboxaldehyde or Lyral®, farnesol, citral, citronellol, alpha-hexylcinnamal, and coumarin) (1), as well as with the patient's own perfumed products is recommended. Multiple positive patch-test reactions are frequently associated with fragrance allergy and often indicate the presence of common or cross-reacting ingredients in natural products (e.g. also to plants of the Compositae or Asteraceae family) (2), the occurrence of cross-reactions between simple fragrance chemicals, or a concomitant sensitivity. Fragrance components may be allergenic of themselves but may also contain sensitizing oxidation products, as is the case with, for example, limonene and linalool (3, 4). Because of the increasing importance of fragrance allergy and to ensure that sensitized consumers are adequately informed, 26 fragrance components are since March 2005 labeled as cosmetic ingredients on the packaging (Annex 3 of the Cosmetic Directive 2003/15/EC).

Preservatives are important allergens in leave-on, but also occasionally in rinse-off products. Within this class important shifts have occurred over the years and the spectrum of the allergenic preservatives varies greatly from country to country. The frequency of contact-allergic reactions to the methyl(chloro)-isothiazolinone mixture had declined in recent years, however, the use of methylisothiazolinone that is less sensitizing but also less efficient, has started to create problems again, probably due to larger use concentrations (up to 100 ppm) (5). Formaldehyde-releasers such as imidazolidinyl and diazolidinylurea, and bromonitropropanediol occasionally also induce contact allergy, while for example, fenoxylethanol and parabens are only rarely responsible of cosmetic dermatitis.

With regard to category-specific ingredients, the number of reactions to p-phenylenediamine (or PPD) and related compounds in oxidative-type hair dyes (for which PPD is not always a good contact-allergy marker, 6), increase in some centers and do decrease in others. Active sensitization to PPD and related compounds from temporary tattoos has become an epidemic, giving rise to severe symptoms when hair dyes are used subsequently. Moreover, also immediate-type reactions to PPD-containing hair dyes- even anaphylaxis -, may occur (7). The mechanism of immediate-



type reactions to the bleaching agents persulfates seems to be IgE-mediated, at least in some patients (8).

(Meth)acrylates are important causes of reactions to artificial nails preparations, more recently to gel formulations being the newest development in this regard, both in clients but particularly in manicurists.

With regard to sunscreen agents, increase in their use has raised the number of (photo) contact-allergic reactions to them, also in children. Particularly benzophenones and octocrylene, which crossreact to ketoprofen, a non steroidal anti-inflammatory drug and important photoallergen, are increasingly being described (9).

A large number of emulsifiers (often regarded as irritants only), emollients, excipients, skin conditioning agents, humectants, and even copolymers (10) are potential contact allergens. Some of these substances are also, because of their low irritancy potential and “skin-mildness”, often incorporated in skin-care products for use on “intolerant or sensitive skin” that have become very popular in recent years. A low irritant potential, however, does not preclude the occurrence of, albeit rarely, allergic contact dermatitis from such cosmetics.

Moreover, controversies have arisen regarding the use of protein-derived ingredients in skin- and hair-care products, such as oat or Avena extract, hydrolyzed wheat protein, and soy bean extract, especially in atopic children (11, 12). Such ingredients may cause not only delayed, but also (sometimes severe) immediate-type reactions. The allergenic proteins might need to be removed from such products (13).

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