

LETTERS TO THE EDITOR

Contact allergens in natural cosmetics—A market survey

To the Editor,

Natural cosmetics (NC) may contain a range of contact allergens, which can cause allergic contact dermatitis (ACD).¹ To establish whether the avoidance of potential allergens in NC would reduce the risk of inducing ACD, the study aimed to determine the prevalences of potential contact allergens, and to identify the significantly different allergens in natural and general cosmetics. A total of 5251 cosmetic products brought by the patients who underwent patch testing during 2010–2019 were reviewed and divided into 2 groups: NC and general cosmetics. The NC were defined as those that used one or more of the following words on their labelling: “nature,” “natural,” “botanic,” “botanical,” “herb,” “herbal,” and “organic.” A search was made of the ingredients listed on the labels to identify their use of any of a total of 197 patch test allergens.

Natural cosmetics accounted for 9.4% of all products. Most proportions were found in oral care products (18.0%), hair care products (16.2%), and rinse-off body care products (14.5%). Makeup products accounted for the smallest proportion (4.9%). At least one allergen was listed on the labelling of 91.4% of the products. Prevalences of groups of allergens labelled on natural and general cosmetics are shown in Figure 1. The allergens that had statistically significant differences are listed in Table 1.

According to the figure, manufacturers might tend to avoid mixing preservatives and fragrances in cosmetics that are advertised as “natural” because consumers expect such products to be free of harmful chemicals and beneficial to health. Although the chance of exposure to the preservative and fragrance allergen groups would

still remain high, using NC instead of general products should reduce the possibility of exposure to the potential allergens.

Common fragrance sensitizers, such as the components of fragrance mix I and II, were found less often in the NC. Nonetheless, the proportion of NC containing peppermint oil, jasmine, and cananga oil was significantly higher than that of general cosmetics. These botanically derived fragrances are weaker sensitizers and less likely to cause allergic reactions.² Methylchloroisothiazolinone in combination with methylisothiazolinone (MCI/MI) and triclosan was more commonly found in the NC, whereas parabens were significantly less common. The public fear of parabens increased the popularity of MI, resulting in an increasing incidence of MCI/MI ACD in recent decades.^{3,4} This suggested that NC might help avoiding potential fragrance sensitizers in cosmetics, but would not reduce the risk of exposure to potential allergenic preservatives, especially to MCI/MI. Interestingly, hair cosmetic-related allergens, especially *p*-phenylenediamine (PPD), were more prevalent in the natural hair care products. A common marketing strategy to hide the hazardous substances is to claim “natural” on the hair care products label to conceal the potent sensitizers and irritants.^{5,6} Consumers have a concern that permanent hair dyes almost always contain potential sensitizers.

Therefore, NC are not free of allergens and it is difficult to avoid allergens in both groups of cosmetics. Individual cosmetic products might contain various numbers of allergens that have different sensitization potencies and are present in different concentrations. Consumers and dermatologists should pay attention to

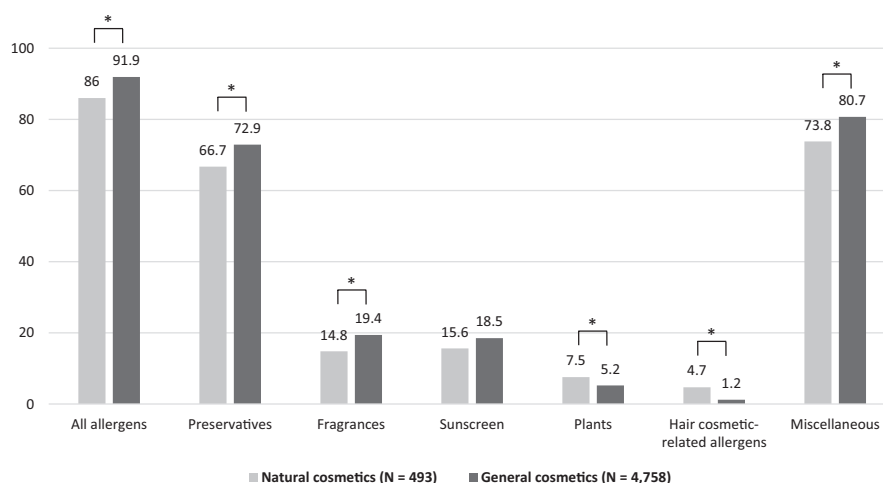


FIGURE 1 Comparison of the types of allergens in natural and general cosmetics.

*refers to *p*-value <0.05

TABLE 1 Allergens in natural and general cosmetics with statistically significant differences

Groups of allergens	Less likely to be found in natural cosmetics than general cosmetics	More likely to be found in natural cosmetics than general cosmetics
Preservatives	Benzyl benzoate	Methylchloroisothiazolinone
	Paraben mix	Methylisothiazolinone
	Phenoxyethanol	Triclosan
Fragrances	α -Isomethyl ionone	Cananga oil
	Butylphenyl methylpropional	Jasmine
	Fragrance mix I	Peppermint oil
	Fragrance mix II	
	Limonene	
Sunscreen	Linalool	
	Butyl methoxydibenzoylmethane	Methylene bis-benzotriazolyl tetramethylbutylphenol
	Homosalate	
Plants	Octocrylene	
	—	Compositae mix II
		Tea tree oil
Hair cosmetic-related allergens	—	<i>p</i> -Phenylenediamine
Miscellaneous	Benzyl salicylate	Benzyl alcohol
	Butylhydroxytoluene	Cetearyl glucoside
	Ethylhexylglycerin	Cocamidopropyl betaine
	Tocopheryl acetate	Lauryl polyglucose

the ingredients on the cosmetic labels, even if they are labelled as natural. Dermatologists should test patients with selected allergens by consulting the products' labelling, including potential allergens and natural ingredients, which of course would differ from one person to the next. Many organizations such as NATURE (nature.org), ECOCERT (ecocert.com), or COSMOS (cosmos-standard.org) tried to reduce misleading use of the term "natural" or other related terms. Standard regulations on the cosmetic labelling should be universally established to prevent the use of these misleading terms, and the safety of products labelled "natural" should not be overclaimed.

KEYWORDS

allergic contact dermatitis, botanic, cosmetics, herbal, natural

CONFLICT OF INTEREST

All authors have no conflicts of interest or financial support to declare.

ETHICAL APPROVAL

This research, a market survey, is not involving human subjects/data, therefore it was exempted from IRB.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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