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ORIGINAL

Preservatives in Personal Hygiene and Cosmetic Products, Topical Medications, and Household Cleaners in Spain[☆]

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KEYWORDS

Contact dermatitis;
Preservatives;
Cosmetics;
Methylisothiazolinone;
Formaldehyde
releasers;
Parabens

Abstract

Introduction: Preservatives are added to cosmetic, household cleaning, and other industrial products to prevent the growth of microorganisms. Unfortunately, exposure to these substances can cause sensitization.

Material and methods: Between January and June 2015, we analyzed the ingredients of 2300 products commercially available in Spain to identify the frequency of a wide variety of preservatives in different product categories. We analyzed 1093 skin care and cosmetic products sold exclusively in pharmacies (dermocosmetics), 458 household cleaning and personal hygiene and cosmetic products sold in supermarkets, 636 topical medications, and 113 cosmetic products sold in a herbal shop.

Results: Phenoxyethanol, citric acid, sodium benzoate, and potassium sorbate were very common in all the cosmetic product categories. Parabens were present in 16.1% of dermocosmetic products, 14.45% of cosmetic products available in supermarkets, 0.88% of cosmetic products available in the herbal shop, 5.18% of topical medications, and in none of the cleaning products. Isothiazolinones were identified in 2.56% of dermocosmetic products, 18% of cosmetic products in supermarkets, 7.9% of cosmetic products in the herbal shop, 63.63% of household cleaners, and in none of the topical medications. Formaldehyde releasers were detected in 5.76% of dermocosmetic products, 6.42% of cosmetic products sold in supermarkets, 7.96% of cosmetic products sold in the herbal shop, 3.93% of topical medications, and 16.74% of household cleaners.

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PALABRAS CLAVE

Dermatitis de contacto;
 Conservantes;
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 Metilisotiazolinona;
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 Parabenos

Conclusions: Evaluation of the presence of preservatives in everyday products allows us to indirectly estimate exposure levels to each one. Measures restricting the use of the most problematic preservatives need to be strengthened.

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Conservantes en productos de higiene y cosméticos, medicamentos tópicos y productos de limpieza doméstica en España

Resumen

Introducción: Los conservantes se agregan a cosméticos, limpiadores domésticos y otros productos industriales para impedir el crecimiento de microorganismos. Desafortunadamente, pueden sensibilizar a usuarios expuestos

Material y métodos: Entre enero y junio de 2015 se analizaron las listas de los ingredientes de 2.300 productos de venta en España: 1.093 dermocosméticos, 458 productos de higiene, cosméticos y limpiadores domésticos de venta en supermercados, 636 medicamentos tópicos y 113 cosméticos de herbolario. Se evaluó la distribución de una amplia variedad de conservantes en las distintas categorías de productos.

Resultados: Conservantes tales como el fenoxietanol, el ácido cítrico, el benzoato sódico y el sorbato potásico estuvieron ampliamente representados en todas las categorías de cosméticos. Se detectaron parabenos en el 16,1% de los dermocosméticos, el 14,45% de los cosméticos de supermercado, el 0,88% de los cosméticos de herbolario, el 5,18% de los medicamentos tópicos y ningún producto de limpieza. Se objetivaron isotiazolinonas en el 2,56% de los dermocosméticos, el 18% de los cosméticos de supermercado, el 7,9% de los cosméticos de herbolario, el 63,63% de los limpiadores domésticos y en ningún medicamento tópico. Contenían liberadores de formaldehído el 5,76% de los dermocosméticos, el 6,42% de los cosméticos de supermercado, el 7,96% de los cosméticos de herbolario, el 3,93% de los medicamentos tópicos y el 16,74% de los limpiadores.

Conclusiones: La evaluación de la frecuencia de los conservantes en los productos de nuestro entorno permite una estimación indirecta del grado de exposición a cada uno de ellos. Se precisa impulsar medidas que conduzcan a una restricción en el uso de los conservantes más problemáticos.

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Introduction

Preservatives are added to cosmetic, household cleaning, and other products to prevent the growth of microorganisms. Inadequate use of preservatives can lead the product to deteriorate. Excessive use of preservatives, on the other hand, could increase the risk of sensitization. Approximately 6% of the population is sensitized to the ingredients of cosmetics, especially preservatives and fragrances.^{1,2} When a risk of sensitization to a preservative is reported, expert committees (*Scientific Committee on Consumer Products* in Europe and *Cosmetic Ingredient Review* in North America) issue opinions that lead to changes in legislation to ensure that the maximum permitted concentrations are restricted or even banned.² Consequently, the cosmetics industry encourages the use of alternative types of preservative (new substances or combinations). Occasionally, the most recently developed preservatives trigger new cases of sensitization, which are as serious as, or more serious than, those arising from the preservative they had replaced. Thus, over the years, there have been several “epidemics” of sensitization to the following preservatives: formaldehyde (1950-1960s), methylchloroisothiazolinone/methylisothiazolinone

(MCI/MI) (1970-80s),³ and methyl dibromo glutaronitrile (1990s).¹ We are currently experiencing an epidemic of allergy to MI that began in 2005, when the substance was approved for use in cosmetics at a concentration of < 100 ppm in the belief that it was less sensitizing than MCI and despite the fact that the first cases of occupational dermatitis to MI had been reported by then.^{4,5} This belief was based on the publication of the results of an in vivo test that were later shown to be incorrect.⁶ The first cases of sensitization to MI in cosmetics began to be detected within only 5 years. The first report was by García-Gavín et al,^{7,8} who provided data from 6 patients with allergy to MI in moist toilet paper. Since then, rates of sensitization to MI have increased exponentially in Europe^{1,9} and the United States, where MI was crowned “Allergen of the Year” in 2013.¹⁰

Parabens, however, which are one of the oldest and still very widely used groups of biocides in cosmetics, are less sensitizing than most recently developed preservatives.^{1,2}

We analyzed the distribution of the main preservatives in several categories of personal hygiene and cosmetic products, topical medications, and household cleaning products.

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