Portuguese consumer exposure to cosmetic products: risk assessment of ingredients in facial and body moisturizers

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The cosmetic industry launches thousands of products annually. Most chemicals are added to the cosmetic product in the form of preservatives and fragrances and some are classified as toxic and prohibited from being used as ingredients because they can cause cancer diseases, mutations, reproductive toxicity, and endocrine disruption. Cosmetic use has been associated with a number of adverse health effects on consumers, including various types of contact dermatitis and immune reactions (Barel et al., 2013). Intolerance derived from the use of cosmetics is a non-inflammatory response and is included in the group of sensitive or intolerant skins and is characterized by burning, itching, redness, but no visible skin changes, i.e. no clinical manifestations (Cockroach, 2002). Irritation derived from the use of cosmetics such as contact dermatitis is an acute or chronic inflammation of the skin that results from exposure to an exogenous agent and may lead to irritation or allergies (Barel et al., 2013).

However, due to the high number of retail outlets and the lack of information on the label, gap information regarding the cosmetic composition and the incidence of adverse reactions caused by a particular ingredient is a reality.

This study aimed to identify the main products and their ingredients of moisturizing creams products available in different Portuguese outlets facilities and related them to potential health effects based on their characteristics, identifying toxicity effects or hypersensitivity reactions to consumers were studied.

From 50 products collected from different outlets, an exhaustive list of the ingredients was surveyed. A standard name was assigned to each ingredient, adopted as the International Nomenclature for Cosmetic Ingredients (INCI) standard (“Skin Deep® Cosmetics Database | EWG,”) at a color scale (green - without severity; yellow - moderate severity; red - high severity) followed by restriction of the ten ingredients most frequent with moderate severity and the five ingredients most frequent high severity.

Perfume, Dimethicone, Phenoxyethanol, BHT, Sodium Polyacrylate, Linalol, Potassium Sorbate, Sodium Benzoate, Limonene and Polyethylene Glycol-100 (PEG-100) were found to be the most commonly used ingredients that were described as moderate severity and Methylpropional Butifenyl, Methylisothiazolinone, Geraniol, Coumarin and

Propylparaben were the most frequent ingredients described as high severity. From collected products and the origin provenance, 21 were “low cost” and 29 “medium/high cost”. It can be seen that about 65% of ingredients classified as high severity become from “low cost” retail outlets. For ingredients classified as moderate severity 47% become from “low cost” retail outlets and the remaining 53% from “medium / high retail outlets.

Regarding the comparison of the number of ingredients classified as “medium/high cost” and “low cost” moisturizers, it can be seen that all contain risk ingredients, and their severity seems to be correlated with “low cost” cosmetics, moisturizers that feature lower, appealing and affordable prices.