**lek. Katarzyna Kunkiel**

# Analiza składów preparatów do miejscowego leczenia atopowego zapalenia skóry u dzieci pod kątem składników aktywnych oraz substancji uczulających

**Rozprawa na stopień doktora nauk medycznych i nauk o zdrowiu**

**w dyscyplinie nauki medyczne**

Promotor: dr hab. n. med. Wojciech Feleszko

Warszawski Uniwersytet Medyczny

Klinika Pneumonologii i Alergologii Wieku Dziecięcego

Obrona rozprawy doktorskiej przed Radą Dyscypliny Nauk Medycznych

Warszawskiego Uniwersytetu Medycznego

Warszawa 2022r.

## Summary

**The analysis of the composition of products used topically in children with atopic dermatitis of active and sensitizing substances.**

Atopic dermatitis (AD, also known as atopic eczema), is a chronic relapsing inflammatory skin disease with periods of exacerbation and remission. AD, characterized mainly by severe itching, dry skin and sleep disturbances, affects 4.7 to 9.2% of children in Poland.

Prerequisites for AD therapy include proper care (liberal use of emollients and daily bathing) as well as avoidance of individual trigger factors.

With a wide variety of preparations intended for the treatment of atopic dermatitis available now on the market, the study was primarily designed to evaluate the usefulness of the preparations in terms of their composition and to determine needs and preferences of patients when choosing the product.

In the first study, the ingredients of emollients based on the INCI nomenclature were compared with a list of 28 haptens, known as the European Baseline Series, used in the diagnosis of contact dermatitis. It was found out that 60% of the 196 emollients available on the Polish market contained at least one hapten while every tenth contained 5 or more different haptens. The most common haptens were parabens, fragrances, formaldehyde and its releasers, lanolin and methylchlorothiazolinone/methylisothiazolinone. Despite the fact that every third emollient contained parabens, their allergenic potential was clinically insignificant.

Topical glucocorticosteroids were analyzed using an analogous methodology in second study. One in three out of 78 preparations contained at least one hapten. The most common haptens were: neomycin (being the active ingredient of the preparation, cross-reacting with gentamicin), parabens, lanolin and clioquinol. It is worth drawing attention to the fact that liquid glucocorticosteroids were devoid of haptens.

Due to amendments to legal regulations in the European Union as well as the need to compare the scale of the problem in other countries, in third study emollients for atopic skin, available in Poland and Spain, were analyzed and then compared with 139 haptens included in the European Basic Series and the Cosmetics and Fragrance Series. Among the 159 emollients in Poland and 111 in Spain, as many as 82.5% and 86% of the preparations, respectively, contained haptens in their composition (up to 12 - 14 different haptens). The cross-section of

the most common haptens was similar in both Poland and Spain: phenoxyethanol, cetyl alcohol, propylene glycol, vitamin E derivatives and fragrances.

In fourth study, the analysis was extended to bath preparations for atopic dermatitis. Out of 150 products, 92.3% contained from one to eight different haptens. The most common haptens were: undefined fragrances, cocamidopropyl betaine, tocopherol acetate/tocopherol, panthenol, and propylene glycol. Although cleansing products remain on the skin for a relatively short time, they may cause allergic contact dermatitis. An informed choice of products used in daily care is therefore essential for patients.

Bearing in mind the need for individual emollient selection, in fifth study a survey among 250 patients with AD and their parents was conducted. For the majority of the respondents, the emollients recommended by doctors were of great importance. Moreover, what was found to determine the choice of the product was the individual selection of the preparation (91%), the absence of preservatives and allergens in the composition (82%), the presence of vitamins and probiotics as well as its moisturizing properties (67%).

While looking for the new methods of AD treatment, in sixth study a systematic review of topical preparations enriched with probiotics and their metabolites was conducted. Four randomized controlled trials and 3 nonrandomized controlled trials were selected. 7 (seven) different bacterial strains were used in these interventions: Lactobacillus johnsonii, L. sakei, Roseomonas mucosa, Staphylococcus epidermidis, S. hominis, Vitreoscillia filiformis and Streptococcus thermophiles. Clinical improvement of the skin condition was achieved in the analyzed studies, however, the diversity of bacterial strains, the heterogeneity of the patient groups and the low methodological quality of part of the research do not allow for drawing reliable conclusions at this stage.

To sum up, the conducted research shows that despite the enormous availability and variety of preparations intended for atopic dermatitis, the composition of the cosmetics raises serious concerns in the context of increased risk of contact dermatitis. A comparative analysis seems to have confirmed that the latter is, unfortunately, true of the situation in the European Union as a whole. In addition, while choosing preparations, patients are guided mainly by the information about the lack of allergens and preservatives in the composition and the recommendations of doctors. It might, therefore, be concluded that doctors, in particular allergists and dermatologists, should give more attention to the analysis of the composition of preparations recommended and producers should consider modifying the preparations in

terms of ingredients which might prove potentially harmful or helpful in atopic dermatitis, especially modifying skin microbiome.