

# ABSTRACT

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**Subject of study:** Bioanalytical laboratory diagnostics in health care

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**Title of diploma thesis:** Comparison of two multiplex (biochip) methods for determination of specific IgE antibodies against food allergens in group of patients suffering from atopic dermatitis

This thesis deals with the comparison of two multiplex (biochip) methods ALEX and ISAC in the determination of specific IgE antibodies against selected allergens in patients with atopic dermatitis. The aim of this thesis is to statistically compare the two methods and perform an evaluation of the data obtained, to assess whether the two methods provide similar results and are interchangeable, or whether a statistically significant difference can be observed. This diploma thesis mainly focuses on inhalant allergens of moulds, mites, house dust mites and animal allergens.

The theoretical part of this diploma thesis is focused on allergies and their clinical forms. It also describes allergens, their nomenclature, biochemical structure and methods used to diagnose allergic inflammation.

In the experimental part, the basic statistics of the cohort, which includes 96 patients from the allergy outpatient clinic of the Skin Clinic of the University Hospital Hradec Králové, is evaluated. The statistical investigation focuses on a quantitative and qualitative data assessment. For the qualitative analysis, the chi-square test was chosen to assess for the frequency of individual allergens in the classes, as well as the frequency of positive and negative results. Correlation analysis and Spearman's correlation coefficient were used for quantitative evaluation.

Upon qualitative analysis of the results, there was a very positive link found between the ALEX and ISAC methods. Additionally, when comparing the quantitative values using correlation

analysis, a statistically significant correlation between these methods could be observed for most allergens. In conclusion, the given objectives were met, it can be deduced that the two methods are in principle identical and can, to a certain extent, be interchanged. The uncertainty lies mainly in the weaker association between the high IgE values for most allergens, with the ALEX method providing lower values than the ISAC method.

**Keywords:** *allergic inflammation, specific IgE, atopic dermatitis, multiplex methods, ALEX, ISAC*