

ALLERGIES UNDER THE MICROSCOPE OF IMMUNOLOGY: OPPORTUNITIES FOR SCREENING

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Introduction Allergic diseases are increasingly prevalent worldwide and pose a major health burden. Early and accurate identification of atopy is crucial for timely management and for guiding subsequent diagnostic procedures. Conventional tests such as total IgE (tIgE) are limited by poor specificity, while specific IgE (sIgE) testing, though precise, is resource-intensive when used indiscriminately. Multiplex screening assays such as ImmunoCAP Phadiatop® and Phadiatop® Infant address these limitations by detecting IgE against panels of common allergens in a single assay.

Aim of the study To evaluate the role of Phadiatop and Phadiatop Infant in allergology, comparing their diagnostic value with tIgE and sIgE, and assessing their usefulness as screening tools for further allergy testing.

Material and methods A literature review was conducted focusing on 97 studies from 1988 to 2025 comparing Phadiatop and Phadiatop Infant with tIgE and sIgE in pediatric and adult cohorts. Diagnostic accuracy, predictive value, and clinical applicability were analyzed.

Results Phadiatop and Phadiatop Infant showed superior sensitivity and specificity compared with tIgE for detecting sensitization. For example, in Pierotti Brazilian pediatric cohort, Phadiatop Infant demonstrated a higher positivity rate (72.6%) compared with Phadiatop Europe (63.8%). Lazova et al. reported predictive values up to 97.4% for combined multi-allergen screening panels in children, clearly outperforming tIgE. A negative Phadiatop result reliably excluded atopy, while positive results supported targeted follow-up with sIgE or skin prick testing. In selected cases, the next diagnostic step is Component-Resolved Diagnostics (CRD), which allows precise identification of the allergenic proteins involved and supports risk stratification and personalized management.

Conclusion Phadiatop and Phadiatop Infant are valuable first-line screening tools in allergology. They enable cost-effective, rapid, and reliable identification of sensitized individuals, improve diagnostic efficiency compared with tIgE, and support rational application of sIgE testing. Their integration into diagnostic algorithms enhances early detection and guides a structured pathway toward advanced methods such as CRD, ensuring accurate and individualized allergy management.

Key-words: allergy screening, ImmunoCAP, Phadiatop, IgE.