
Correspondence

AUTHOR'S RESPONSE TO ACCURACY OF IgE ANTIBODY LABORATORY RESULTS

We appreciate the opportunity to comment on the Letter by Dr Hovanec-Burns¹ regarding our recent article.² We feel that there may be some misunderstanding regarding the aim and the conclusions of our study.

The aim of our study was simply to investigate whether quantitative specific IgE antibody levels measured in commercial laboratories using different technologies can truly be regarded as comparable. The study consisted of 2 interrelated components. The first tested samples from patients to 2 important allergens (peanut and soy) in a blinded manner using 3 laboratory systems. The second analyzed samples containing only a single kind of IgE antibody, in known quantities, with 1 defined binding specificity and strength (affinity), in a blinded manner for total IgE and allergen specific IgE content using the same 3 systems. In these samples and their dilutions, the total IgE level should be equivalent to the specific IgE level measured in each system. This was achieved by using 2 human-mouse monoclonal chimeric IgE antibodies (a-Der p 2 and a-Bet v 1)

Our results for the patient samples showed that although all 3 technologies claim to be linked to the World Health Organization total IgE standard and report their results in kU_A/L, the results are still widely disparate. Our conclusion that the systems do not give the same quantitative values was recognized by Dr Hovanec-Burns.

One approach to determine whether the systems can measure true specific IgE results is to use a sample in which all the IgE protein binds a single major allergen specificity and where the exact amount of IgE protein in the sample is known. A mouse-human IgE chimeric antibody fulfils these requirements, and, contrary to the claim of Dr Hovanec-Burns, if measured correctly, the obtained results should be similar for total IgE and specific IgE. This has been precisely outlined previously,³ as was referenced in our study.

The results of our study actually show good agreement for the total IgE results, with the expected value (absolute amount of chimeric IgE antibody added to the sample) and between the systems, demonstrating the abilities of the different technologies to correctly determine the quantity of total IgE. In contrast, the specific IgE antibody results, expected to be the same as the total IgE results for the chimeric antibodies, exhibited surprisingly different results, with Immulite giving higher-than-expected values and the Turbo RAST lower-than-expected values.

The argument by Dr Hovanec-Burns that such discrepancies can be explained by overrecovery and underrecovery, relative to the total IgE as a result of different affinities of the

allergen binding the IgE antibody and the anti-IgE antibody used for detection, is not valid, as was explained on theoretical grounds and verified experimentally by Schuurman et al.⁴ However, if a total IgE reference calibrator curve is used that demonstrates competition between capture and detection antibodies, the specific IgE antibody test, which is not subject to any competition in assay design, will result in a stronger signal for the specific system than for the total IgE system and result in an "excessively high" value. Thus, such systems will "overestimate" specific IgE antibodies compared with the actual amount of allergen specific IgE present provided that there is a sufficient amount of allergen present for binding. When an allergen component is present in an insufficient amount, the system will underestimate the concentration of specific IgE to this component. Such systems may be used, but the reported values should be given in arbitrary units and not linked to World Health Organization-calibrated IgE values. From Dr Hovanec-Burn's reasoning, we believe that this is why Immulite is reporting excessively high values compared with total IgE, ie, the system uses a calibration curve that is too low, resulting in high values for specific IgE antibodies.

Regarding the clinical validity of our results, remember that our publication studied only the quantitative agreement between different methods and the potential clinical implications of disagreement. However, there are many studies that clearly demonstrate the clinical validity and usefulness of the ImmunoCAP results in terms of comparison with skin testing⁵ and diagnosing and evaluating allergic disease.⁶ We return to the original conclusions from our study, that just because different systems present their results in the same units does not necessarily mean that the results are interchangeable, and this might have serious clinical implications.

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Disclosures: Dr Ahlstedt is an employee of Phadia AB.

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