Prospective evaluation of the total IgE, the AlaTOP inhalant allergy screen and the specific IgE tests on the Immulite 2000 (DPC-Bühlmann) in comparison to the UniCAP 100 (Phadia)

Luciana Di Vincenzo, Vincent Aubert
Service d’Immunologie et d’Allergie, Centre Hospitalier Universitaire Vaudois, Lausanne, Switzerland

Aim of the study
To evaluate in a prospective study the diagnostic performance of the Immulite 2000 System for the detection of total IgE, AlaTOP inhalant allergy screen and specific IgE in comparison with the UniCAP 100 routinely utilized in our laboratory.

Materials and Methods
During a 3 months period, all serum samples from patients who were referred to the allergist for a suspected allergic disease were prospectively analyzed in parallel with both systems, according to the physician’s request. The two major immunoassays systems widely accepted and used in the clinical laboratories were tested.

The fully automated random-access analyzer Immulite 2000 (DPC Los Angeles, CA; commercialized in Switzerland by Bühlmann Laboratories AG, Basel) based on the two-step chemiluminescent immunoassay technique employs liquid allergen techniques. The allergens, in liquid phase, are covalently bound to a soluble high-molecular-mass matrix. In the first step, in patient serum, allergen and strip-paste coated beads are incubated together for 30’ on constant agitation. After washing, alkaline phosphotase-label immunochemical antibody specific for human IgE is added to the beads. The beads are washed again and the enzyme label is measured using a chemiluminescent substrate.

In the semi-automated UniCAP 100 analyzer (Phadia, Sweden) based on fluorimunometric assays, the allergens are covalently coupled to a high capacity flexible hydrophobic carrier polymer matrix (ImmunoCAP technology).

All assays were performed according to the instructions in their respective package inserts.

Results:

1. Total IgE (n = 199)

Comparison of total IgE – correlation of Immulite 2000 vs UniCAP 100.

2. Allergy screen (AlaTOP) (n = 122)

Agreement on class scores per individual allergens for the 12 most frequently requested allergens.

3. Specific IgE (n=751)

Allergens frequency: the 21 most frequent allergens requested.

Conclusions:
We found a good overall agreement of both systems. Our data support that Immulite 2000 is a useful in vitro diagnostic tool. Total IgE: A very good agreement of both systems for total IgE was observed.

Inhalant allergen screening: The Phadiatop performs with a better specificity and sensitivity than the AlaTOP.

Specific IgE: We observed 100% concordance with 4 allergens (m1i=51, f1=7, f17=6, and f14=5). A significant discordance (more than 2 class scores) was observed for 4 sera (allergens g3=3, r=7x, f=x2 and f7=). In 29 sera we observed a 2 class scores discordance between the 2 systems (main allergens involved: f: n=3; d: n=2; d: n=2; f: n=2; e: n=2; f: n=2; d: n=2; f: n=2).

Even if the overall agreement is good, with more than 79% of identical results, 47/577 results (24 Immulite positive and 23 Immulite negative 8%) could not be confirmed with the Immulite 2000.

Our data demonstrated that during the 3 months period of the study, the DPC allergens panel did not cover the full range of the physician’s requested allergens (12 not available allergens have been asked corresponding to 23 requests).