Comparison between two systems for the detection of specific IgE to bee and wasp venom

N. Pfender[1], M. Mahler[2], N. Offermann[2], R. Lucassen[2], M. Fooke[2] and T. Jakob[1]

[1] Allergy Research Group, Department of Dermatology, University Medical Center Freiburg, Germany

[2] Dr. Fooke Laboratorien GmbH, Mainstraße 85, 41469 Neuss, Germany

Background: The majority of IgE test systems utilize allergens immobilized on a solid support. The ALLERG-O-LIQ System (Dr. Fooke Laboratorien, Neuss, Germany) in contrast, follows the reversed allergo-sorbent test (REAST) protocol using anti-IgE coated microtiterplates and biotinylated allergens combined with streptavidin horseradish peroxidase conjugate. The present study compared the ALLERG-O-LIQ with the ImmunoCAP® system (Phadia, Upsalla, Sweden) for the detection of specific IgE (sIgE) to bee and wasp venom.

Methods: Sera from four groups were analyzed: *A*: Patients with well defined insect venom allergy to either bee (n=12) or wasp (n=28) venom; *B*: Patients with well defined insect venom allergy and double sensitization with (n=20) or without (n=20) detection of CCD reactive IgE; *C*: Atopic individuals (Sx1 pos, total IgE mean=2986 KU/L, range 186 – 23813 KU/L) without history of insect venom allergy (n=30); *D*: Non atopic individuals without history of insect venom allergy (n=30). Skin prick tests and, if negative, intradermal tests were performed in group *A*+B. Diagnosis of insect venom allergy was based on history, skin testing and detection of sIgE by ImmunoCAP®. For this study sera were also tested by ALLERG-O-LIQ.

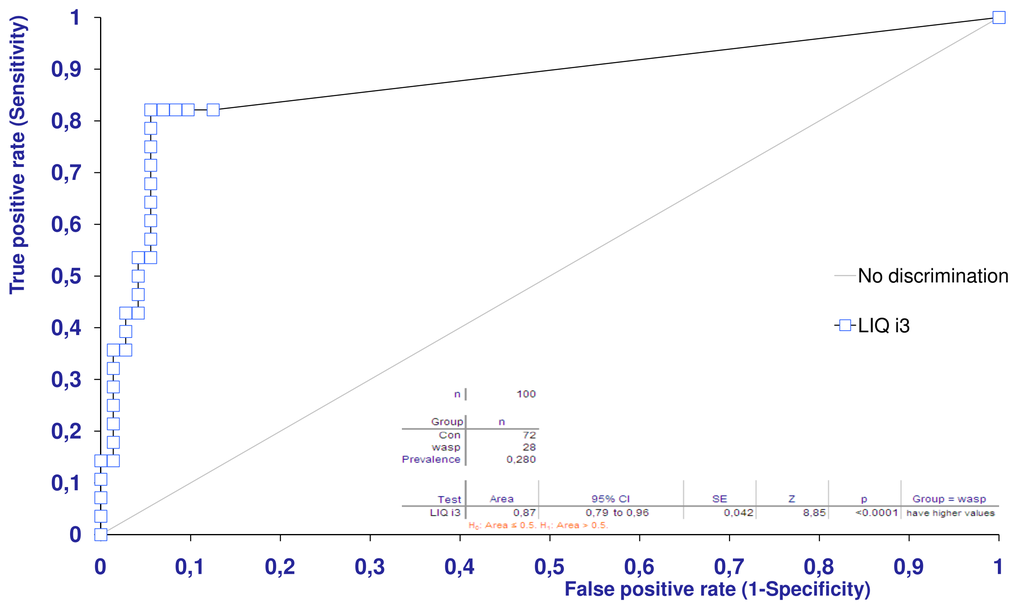

Figure 1 Receiver operating characteristic ALLERG-O-LIQ vs. diagnosis for wasp venom (i3) allergy

Results: According to the definition of group *A* sIgE to bee venom (i1)/ wasp venom (i3) was detectable in all (12/12 and 28/28) individuals by ImmunoCAP® and in 12/12 (i1) and 27/28 (i3) by ALLERGO-LIQ. Group B: sIgE to i1 was detectable in 36/40 by ImmunoCAP® and 30/40 by ALLERGO-LIQ, sIgE to i3 was detected in 39/40 by both methods. In group C positive results were detected in 19/30 (i1) and 9/30 (i3) by ImmunoCAP® and 1/30 (i1) and 1/30 (i3) by ALLERG-O-LIQ. In group D positive results were detected in 3/30 (i1) and 4/30 (i3) by ImmunoCAP and 0/30 (i1) and 4/30 (i3) by ALLERGO-LIQ Receiver operating characteristic analysis (ALLERG-O-LIQ) showed excellent discrimination between patients with diagnosed insect venom allergy and controls. The area under the curve was 0.99 (i1) and 0.87 (i3) and the sensitivity/ specificity were 100% / 93% (i1) and 82% / 93% (i3) compared to the diagnosis.

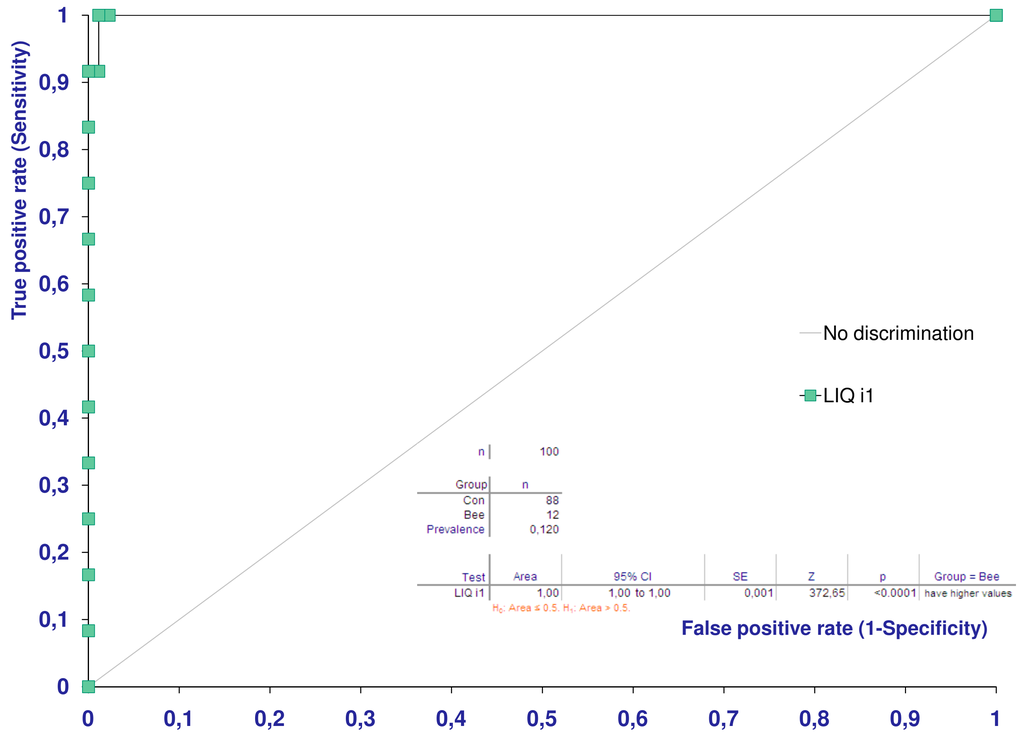

Figure 2 Receiver operating characteristic ALLERG-O-LIQ vs. diagnosis for bee venom (i1) allergy

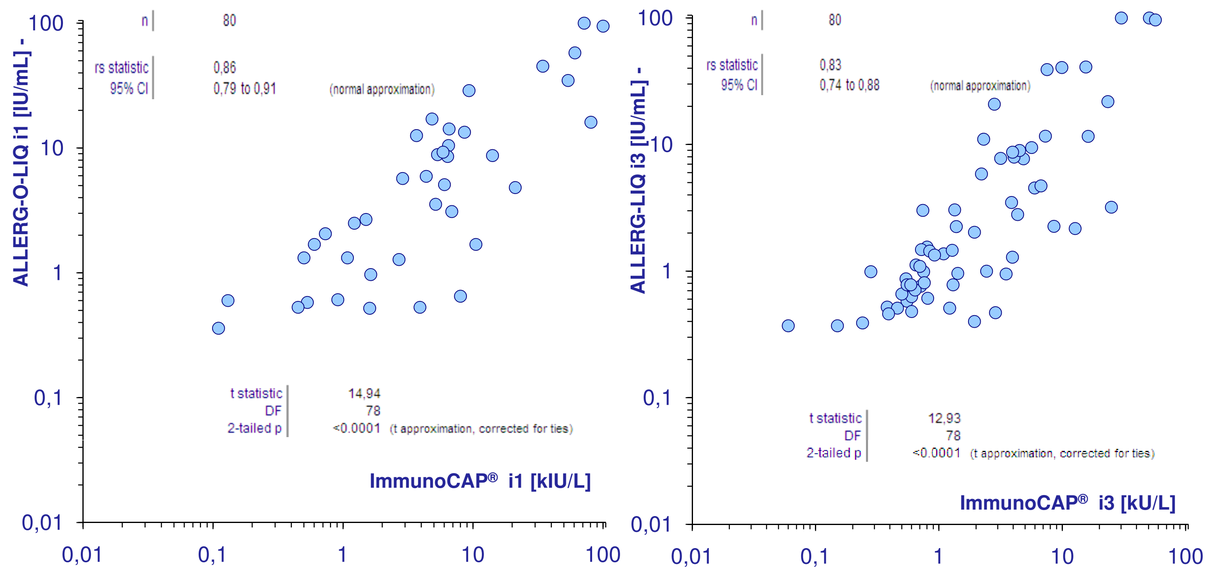

Figure 3 Spearman correlation diagram of ALLERG-O-LIQ vs. ImmunoCAP® A) For bee venom (i1) B) For wasp venom; (i3) (Group A&B n=80)

High quantitative agreements for Group *A+B were found* between ALLERG-O-LIQ and ImmunoCAP® for i1 and i3 (see Figure 3).

Conclusion: We found a good quantitative agreement between ALLERG-O-LIQ and ImmunoCAP® system in patients with clinically well defined insect venom allergy (A+B). Additionally, we found similar agreements between both methods and skin testing. In control group C though, we observed significantly more positive results by ImmunoCAP®. This high rate coincided with a high total IgE titer of the samples. The ALLERG-O-LIQ system represents a sensitive and highly specific tool for the detection of sIgE to insect venom.

presented at: **EAACI London 2010**