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Correlation between former and new assays of latex IgE-specific determination using the K82 and K82 recombinant allergens from the Pharmacia Diagnostics® laboratory

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Keywords: K82; latex allergy; IgE; occupational allergy.

One of the problems encountered with current allergen extracts is that they may lack important allergenic proteins. The ultimate aim is to produce standardized extracts containing all the relevant allergens and to ensure that they are identical in every batch. Recombinant DNA technology applied to the production of allergenic proteins has already proved its usefulness in clinical research (1). Another advantage is that these allergens can be produced with more consistency. In the case of latex allergy diagnosis, one standardized extract was utilized until recently in the CAP-FEIA K82® assay (Pharmacia, Uppsala, Sweden). The laboratory has recently improved its allergen extract with the addition of Hev b5 recombinant allergen, which was only weakly present

in the former assay. This 16-kDa protein is considered as a major allergen, frequently involved in the latex sensitization of health care workers (2–5).

In this study, we wanted to discover if this new recombinant K82+ was more sensitive than the former K82 in the diagnosis of latex allergic patients.

On the same blood sample, we evaluated the level of latex-specific IgE using both the K82 and the recombinant K82+ CAP-FEIA® assays. These tests were performed on 56 patients followed up in our unit for an already known latex allergy and on 34 patients without any clinical history of latex allergy. The diagnosis of latex allergy was based upon the clinical history and the positivity of skin prick tests (Stallergènes S.A., Antony, France) and/or specific latex IgE K82 (> 0.35 kU/l). Comparison between the two assays was made by the intra-class correlation coefficient. Results were expressed as medians, 25th and 75th percentiles. Statistical analysis was performed using SAS software (SAS Institute).

Seventy-three per cent of our subjects were health care workers, of which 83.3% were females. In the whole population, the median value for latex IgE was 1.19 kU/l (0–3.22) with the new K82+ and 0.68 kU/l (0–3.82) with the former K82. In the latex allergic patient population, the median was 2.46 KU/l (0.97–4.33) with the new K82+ and 2.38 kU/l (1.26–7.66) with the former K82. Correlation between the two methods was high at 77.7% (Fig. 1). In the latex allergic population, six of 29 samples negative with the K82 assay became positive (> 0.35 kU/l) with the

recombinant K82+ assay. The sensitivity of K82+ was 92.8% (95% CI: 0.86–0.99) and the specificity was 94.1%. With the former K82, they were 85.7% and 100%, respectively. In the latex allergic population, 30.3% of the patients had IgE levels which at least doubled with the K82+ assay. Results showed that the K82+ assay had a higher threshold of detection than the K82 ($P < 0.05$).

Latex-specific IgE assay sensitivity is enhanced using Hev b5-enriched latex allergosorbent. Several concordant studies (6, 7) have been published. In the study by Hamilton et al. (6) study, involving 116 patients (68 allergic and 48 controls), the sensitivity was 61.8% with K82+ vs 51.5% with K82 and the specificity was 91.7% vs 93.8%. Latex-specific IgE levels doubled between the two assays for 37% of the patients. Higher detection capacity may be useful for the prevention of this life-threatening allergic disease.

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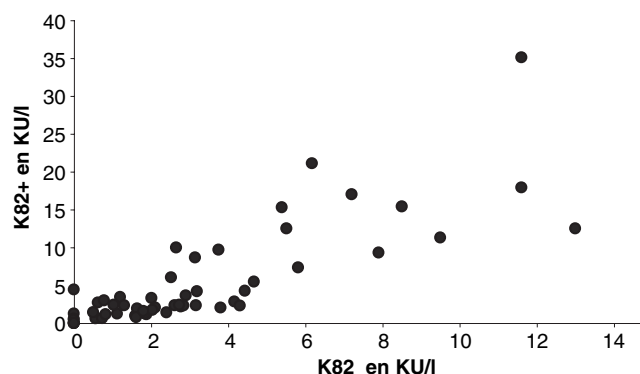


Figure 1. Correlation between former K82 and new recombinant K82+ in latex allergic population.

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Occupational rhinitis to leek (*Allium porrum*)

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Key words: leek; occupational rhinitis.

The leek belongs to the Liliaceae family, as do onion, garlic and asparagus. Hypersensitivity to leek as a cause of asthma and dermatitis has been previously described (1). We present a patient with occupational rhinitis due to inhalation of leek juice.

A new source of occupational rhinitis.

The patient, a 35-year-old woman, had been peeling leeks for 10 months. She had no history of atopy. Six months after having started this work, she began experiencing conjunctivitis and rhinitis without asthma or eczema on her hands. She tolerated ingestion of leek, garlic and onion without problems.

A prick-prick test with raw leek leaf and leek bulb was positive (20 × 10 and 10 × 10 mm respectively). She also presented positive prick-to-onion (5 × 5 mm) but negative prick-to-garlic and asparagus. A conjunctival challenge by Hosen technique (2) performed with raw leek juice 1/10 w/v (1/1000 dilution) was positive. A nasal challenge by Malo method (3) was positive with a 1/100 dilution of the leek extract. The same tests were negative in controls.

The Sodium dodecyl Sulphate-polyacrylamide gel electrophoresis-immunoglobulin E-immunoblotting performed with the patient's serum and the control sera showed similar responses against leek and onion and different against garlic (fig. 1). The patient's serum had IgE that reacted with bands at about 45, 18 and 15 KDa in a raw leek extract. This sensitization pattern seems to be different to other previously described cases of sensitization to leek and other liliaceae (1, 4).

We performed a specific IgE determination to Bet v 1 and profilin Bet v 2 (Pharmacia, CAP) with negative results, suggesting that the leek 18 and

15 KDa bands do not correspond to Bet v 1 and profilin homologs, respectively.

Although it does not have the same impact as occupational asthma, occupational rhinitis may precede asthma symptoms (5) and causes distress, discomfort and work inefficiency. The liliaceae family ought to be kept in mind as a cause of occupational rhinitis.

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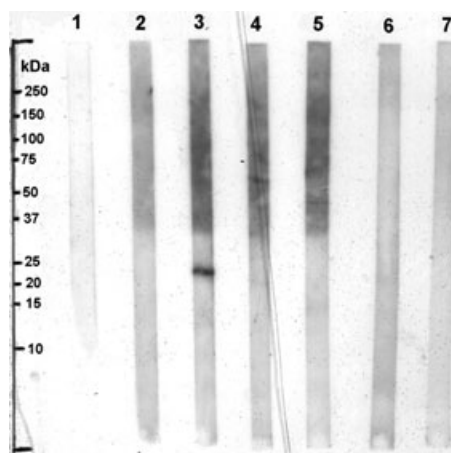


Figure 1. Sodium dodecyl Sulphate-polyacrylamide gel electrophoresis-immunoglobulin E immunoblotting performed with patient's serum and control sera:

Line 1: garlic negative; Line 2: onion negative; Line 3: leek + patient serum; Line 4: garlic + patient serum; Line 5: onion + patient serum; Line 6: garlic + positive serum; Line 7: Leek + control serum.