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References

1. Spuergerin P, Walter M, Schiltz E, Deichmann K, Forster J, Mueller H. Allergenicity of alpha-caseins from cow, sheep, and goat. *Allergy* 1997;**52**:293–298.
2. Umpierrez A, Quirce S, Maranon F. Allergy to goat and sheep cheese with good tolerance to cow cheese. *Clin Exp Allergy* 1999;**29**:1064–1068.
3. Alvarez MJ, Lombardero M. IgE-mediated anaphylaxis to sheep and goat's milk. *Allergy* 2002;**57**:1091–1092.
4. Johansson SG, Hourihane JO, Bousquet J, Brujnzeel-Koomen C, Dreborg S, Haahtela T et al. A revised nomenclature for allergy. An EAACI position statement from the EAACI nomenclature task force. *Allergy* 2001;**56**:813–824.

Allergic reactions to macadamia nut

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Key words: anaphylaxis; cross-reactivity; macadamia; specific IgE; tree nut allergy.

Anaphylactic reactions are frequently caused by either peanuts or tree nuts (1). Macadamia nut is considered to be one of the prime edible nuts. It grows on two species of Australian trees, *Macadamia integrifolia* and *M. tetraphylla*.

Although not as commonly consumed as other tree nuts or peanuts, macadamia can occasionally cause serious allergic reactions (2–5). We report on two

Anaphylaxis and oral allergy syndrome to macadamia nut.

patients with allergic reactions to this nut.

A 42-year-old man developed generalized pruritus, itching of the throat, rhinitis, dyspnea and dizziness 5 min after eating a few roasted macadamia nuts. The patient had a history of seasonal allergic rhinitis and asthma and oral itching when eating carrots, apples or walnuts.

Skin-prick tests (SPT) were performed with standardized extracts (ALK Abello, Høsholm, Denmark). Positive tests were observed to tree pollen (birch, alder, hazel, ash, beech, oak) as well as rye grass and plantain pollen. SPT to peanut, almond, Brazil nut and walnut were negative, whereas SPT to hazelnut showed a clearly positive reaction. A prick-to-prick test with roasted macadamia (Nutfields GmbH, Dietzenbach, Germany) showed a positive reaction, whereas SPTs in five controls were negative. Total serum IgE was 36.9 kU/l, and mast cell tryptase was normal. Specific IgE (CAP-RAST, Pharmacia Inc., Uppsala, Sweden) were negative to almond and macadamia nut, and positive for hazelnut (0.6 kU/l).

A 34-year-old man repeatedly developed severe oral burning, itching and swelling after eating hazelnut, walnut, Brazil nut, almonds and macadamia nuts, while tolerating peanut and cashew nut. He had a history of seasonal allergic rhinitis, contact urticaria to latex and oral itching when eating raw celery, apple, kiwi and tomato.

Positive tests were observed to tree pollen (birch, alder, hazel, ash, beech, oak), rye grass and sorrel pollen, as well as to latex. SPT to peanut, almond, hazelnut, Brazil nut and walnut were positive, whereas SPT to cashew nut showed a negative reaction. A prick-to-prick test with roasted macadamia was positive. Total serum IgE was 60 kU/l, and mast cell tryptase level was slightly elevated. Specific IgE to latex were 1.7 kU/l and negative to peanut, almond, hazelnut, Brazil nut, walnut, cashew nut and macadamia nut.

Three cases with anaphylaxis to macadamia nut (2–4), and a 1-year-old boy, who had suffered from erythema and periorbital angioedema after inadvertently putting a macadamia nut into his mouth (5) have been previously reported.

SPT with fresh macadamia nut was positive in all four subjects (2–5). In one patient, strong binding by IgE to a protein of 17.4 kDa from both raw and roasted extracts was shown (2). While SPT was also positive in our patients, macadamia nut-specific IgE were negative, comparable with high false-negative rates as, e.g. in peanut allergy (6). However, specific IgE to hazelnut were slightly elevated to 0.6 kU/l in our first patient and 1.07 AEU/ml in another individual (2). As many of the proteins responsible for severe allergic reactions to tree nuts share the feature of a general resistance to proteolysis and denaturation, the consumption of tree nut (and peanut) oils may be a risk for patients, depending on the method of processing (7).

In conclusion, even the 'queen of nuts' may cause serious allergic reactions. A possible cross-reactivity to other nuts, particularly hazelnut, should be considered. Moreover, further evaluation of recombinant molecules as well as development of hypoallergenic forms may provide interesting diagnostic and treatment options in potentially life-threatening nut allergy.

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References

1. Roux KH, Teuber SS, Sathe SK. Tree nut allergens. *Int Arch Allergy Immunol* 2003;**131**:234–244.
2. Sutherland MF, O'Hehir RE, Czarny D, Suphioglu C. Macadamia nut anaphylaxis: Demonstration of specific IgE reactivity and partial cross-reactivity with hazelnut. *J Allergy Clin Immunol* 1999;**104**:889–890.
3. Pallares DE. Allergy to macadamia nut. *Ann Allergy Asthma Immunol* 2000;**85**:385–386.
4. Häberle M, Hausen BM. Soforttyp-Allergie nach Genuss von Macadamia-Nüssen. *Allergo J* 2002;**11**:S42.

5. Senti G, Ballmer-Weber BK, Wüthrich B. Nüsse, Samen und Kerne aus allergologischer Sicht. *Schweiz Med Wochenschr* 2000;130:1795–1804.
6. De Leon MP, Glaspole IN, Drew AC, Rolland JM, O'Hehir RE, Suphioglu C. Immunological analysis of allergenic cross-reactivity between peanut and tree nuts. *Clin Exp Allergy* 2003;33:1273–1280.
7. Teuber SS, Brown RL, Haapanen LAD. Allergenicity of gourmet nut oils processed by different methods. *J Allergy Clin Immunol* 1997;99:502–507.

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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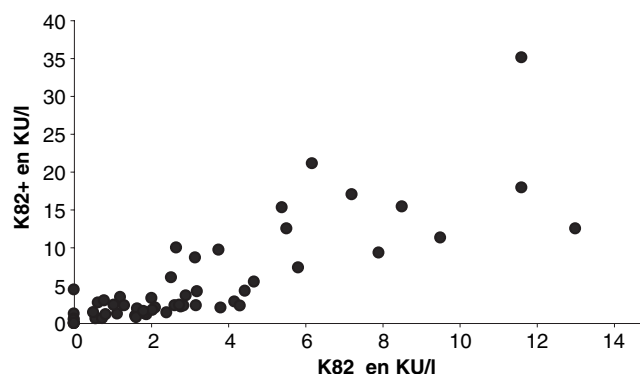


Figure 1. Correlation between former K82 and new recombinant K82+ in latex allergic population.