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Letter

Tree nut- and sesame-specific IgE do not decrease from baseline with peanut oral immunotherapy (OIT)

Peanut oral immunotherapy (OIT) induces significant changes in peanut-specific immunoglobulin E (IgE) in peanut-allergic subjects, and most peanut-allergic individuals completing therapy safely ingest approximately 20 peanuts.[1,2] Approximately one third of peanut-allergic individuals are allergic to tree nuts,[3] and the effect of peanut OIT on other allergen-specific IgE is unknown. Because cross-reactivity exists between seed storage proteins in peanut and allergens present in almond[4] and sesame,[5] we hypothesized that peanut OIT would induce a significant decrease in almond- and sesame-specific IgE but would not affect cashew- and walnut-specific IgE.

Serum samples from our original peanut OIT cohort[1] were retrospectively analyzed for almond-, sesame-, cashew-, and walnut-specific IgE. Sixteen subjects (ages 26 to 112 months at enrollment, mean age 67 months ± 24.7 months, 10 male, all white) with convincing clinical history of peanut allergy[1] were included in the analysis based on specific IgE greater than 0.01 kU/L to almond, sesame, cashew, and walnut at the beginning of treatment. Serum was collected at 0, 12, and 24 months on OIT. Skin testing and oral food challenges to tree nuts and sesame were not performed, and only one subject had a history of reacting after tree nut ingestion. Data regarding tree nut and sesame consumption throughout the study were not recorded. Specific IgE was quantified using ImmunoCAP 100 (Phadia AB, Uppsala, Sweden) according to the manufacturer's instructions. Analysis was performed using the 2-tailed Wilcoxon signed rank test to compare IgE values at 0 and 12 months, 0 and 24 months, and 12 and 24 months.

Peanut-specific IgE significantly decreased between all time points (Fig 1), and all subjects were desensitized to peanut. Sesame- and almond-specific IgE increased significantly between 0 and 12 months, and almond-specific IgE decreased significantly between 12 and 24 months (Fig 1). There were no significant changes between the other measured time points. Significant changes in cashew- and walnut-specific IgE were not detected (Fig 1).

Our data show that, in contrast to its effect on peanut IgE, peanut OIT does not significantly decrease IgE to almond, cashew, sesame, or walnut compared with baseline values, despite the known cross-reactivity between peanut and sesame and peanut and almond. The clinical significance and changes observed between 0 and 12 or 12 and 24 months on treatment is uncertain. The small sample size, wide range of values measured, and the overall marginal changes in specific IgE values must be taken into consideration when interpreting the data.

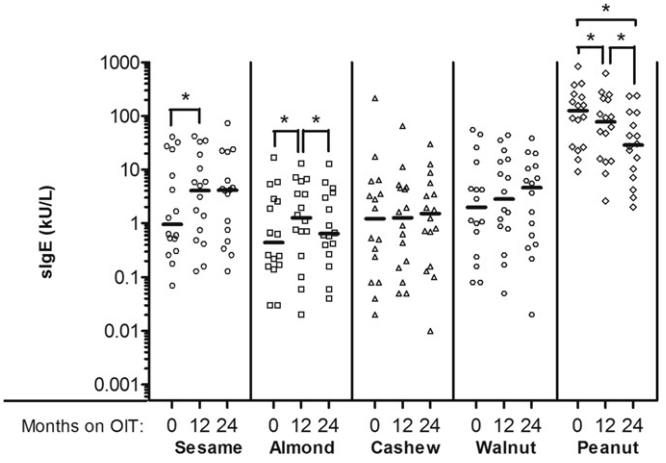


Figure 1. Peanut-specific IgE decreased significantly between all measured time points (0–12 months, $P = .019$; 0–24 months, $P = .0005$, 12–24 months, $P = .0005$, denoted by *). Serum levels of sesame- and almond-specific IgE are significantly increased during the first 12 months of peanut OIT ($P = .03$ and $P = .01$, respectively) and almond-specific IgE decreases significantly between 12 and 24 months ($P = .03$). Significant changes in cashew- and walnut-specific IgE were not measured at any time point. Median values are represented by *black horizontal lines* within the scatter plot.

Because we did not perform oral food challenges to the tested tree nuts to verify whether the subjects reacted clinically, we cannot be certain whether the changes we observed in almond- and sesame-specific IgE are clinically relevant. Predictive capabilities based on results of tree nut–specific IgE testing have not been clearly established apart from walnut,[3] making it difficult to assess the likelihood of reactivity to a particular tree nut based on results of specific IgE testing. However, in a cross-sectional study of peanut-allergic patients, co-sensitization and co-allergy to tree nuts and sesame were common.[3] This was recently confirmed in a study of peanut-allergic children who underwent controlled challenges to nuts and seeds.[6]

If there is no significant decrease from the baseline-specific IgE, changes in clinical sensitivity would not be expected. However, we have shown that desensitization to peanut after 12 months of OIT occurs independent of changes in peanut-specific IgE.[2] By 24 months of treatment, changes in clinical sensitivity to peanut accompany significant decreases in peanut-specific IgE.[1] If the cohort of subjects described were followed for a longer

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period, significant decreases in tree nut–specific IgE might be seen. Future studies will need to incorporate entry challenges to tree nuts, periodic challenges while on therapy, and long-term follow-up.

Avoidance of the allergenic food and treatment of a reaction with auto-injectable epinephrine is still considered the standard therapy for food allergy.[7] As new treatment options emerge, clinicians must be mindful of the implications of each treatment for the multi-food-allergic person. The data from this report do not support the notion that cross-reactive allergens may be treated with peanut OIT. Regardless of the modality of therapy used, if the therapy is only allergen-specific, the benefit of protection against 1 allergen while remaining allergic to other allergens must be considered. Tree nut–allergic individuals receiving peanut OIT should continue strict avoidance of tree nuts and should carry self-injectable epinephrine in case of accidental ingestion.

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