

342 Reduction in Severity Following 12 Months of Epicutaneous Immunotherapy for Peanut AllergyPhilippe Begin, MD FAAAAI¹; ¹Universite de Montreal.

RATIONALE: Daily epicutaneous immunotherapy (EPIT) for 12 months with DBV712 250 µg has been shown to be statistically superior to placebo in desensitizing (increasing reactivity threshold) 4-11-year-old peanut-allergic children in a Phase 3 clinical trial (PEPITES). While decreasing the likelihood of accidental ingestion reactions through desensitization is a major goal of food allergy immunotherapy, caregivers and patients also desire a reduction in reaction severity.

METHODS: Double-blind, placebo-controlled food challenges (DBPCFC) were performed at baseline and following treatment (Month-12) to determine eliciting dose (ED) in PEPITES. Standardized DBPCFCs were stopped only after sufficient objective signs/symptoms, in accordance with PRACTALL guidelines. Symptoms in each body system were graded by prespecified criteria. Maximum severity of symptoms at baseline and Month-12 between active and placebo groups was compared post-hoc, in all organ systems (AOS) and five significant symptom domains (SSS) of wheezing, cardiovascular, laryngeal, vomiting and diarrhea.

RESULTS: At baseline, there was a similar proportion of mild/moderate/severe objective signs/symptoms in AOS systems ($P=0.931$) and SSS systems ($P=0.946$) between DBV712 250 µg and placebo. At Month-12, there was a significant difference between groups in AOS and SSS organs systems severity, irrespective of ED ($P<0.001$ and 0.016 , respectively). By AOS, 16.2% of active subjects had a maximum symptom severity of "severe" compared with 27.5% in placebo ($P=0.019$). Similarly, at Month-12, 20.7% of active subjects had no SSS symptoms compared with 11% of placebo ($P=0.031$).

CONCLUSIONS: In addition to increasing reactivity threshold in 4-11-year-old peanut-allergic children, investigational EPIT with DBV712 250 µg may also reduce the severity of allergic reactions.

343 Real World Adoption of FDA-approved Peanut Oral Immunotherapy with PalforziaS Shahzad Mustafa, MD¹, Sara Patrawala, MD²; ¹Rochester Regional Health, ²University of Rochester Medical Center.

RATIONALE: Oral immunotherapy with Palforzia (POIT) is the first FDA-approved therapy for food allergy, aimed to mitigate accidental allergic reactions in children and adolescents with peanut allergy (PA). Given the novelty of the therapy, it is unknown what percentage of patients and families will pursue this option versus continued strict avoidance.

METHODS: All patients ages 4-17 with a physician diagnosis of PA were enrolled. Patient demographics, comorbidities, PA diagnostics, and rationale for choice for/against POIT were collected. Descriptive statistics are reported with medians and interquartile ranges.

RESULTS: Fifty-seven patients were enrolled, and 40/57 (70%) were male. Median age was 9 (7-12) years old and 39% had concurrent asthma. 74% had at least one additional food allergy, with tree nut being the most common (58%). The median age of diagnosis of PA was 1 (1-2), with anaphylaxis the most common presentation (26%), followed by rash (18%). Median wheal = 15 mm (5-20), and median peanut sIgE = 17.9 kU/L (3-100). Of the 57 patients, 4 (7%) pursued POIT, 49 (86%) declined and 4 (7%) were undecided. The most common reason to pursue POIT was protection from future reactions whereas the most common reasons to decline were concerns over side effects (45%) and time commitment required for therapy (31%).

CONCLUSIONS: The majority of PA patients (86%) chose not to pursue POIT, citing side effects and time commitment as the most common barriers. Future studies are needed to better understand characteristics of patients and families who pursue POIT, as well as rates of adoption over time.

344 Mass Cytometry Reveals Immune Signatures Associated With Desensitization Through Multi-Food Oral Immunotherapy.Ziyuan He¹, Diane Dunham¹, Xiaoying Zhou¹, Shu-Chen Lyu¹, Monali Manohar, PhD¹, Sharon Chinthrajah, MD¹, Sandra Andorf, PhD², Kari Nadeau, MD PhD FAAAAI³; ¹Stanford University School of Medicine, ²University of Cincinnati College of Medicine, Cincinnati Children's Hospital Medical Center, ³Stanford Univ School Medicine.

RATIONALE: Individuals with multiple food allergies represent approximately 30% of all patients with food allergies. Desensitization can be achieved safely and rapidly with multi-food oral immunotherapy (OIT) in combination with Omalizumab; however the immune mechanism behind desensitization to multiple foods remains unclear.

METHODS: Mass cytometry was used to assess the immune profile of 12 participants from a published trial (Andorf et al., Lancet eClinicalMedicine, 2019) who were allergic to multiple foods including peanut and cashew and were successfully desensitized. PBMCs collected before and post-OIT were stimulated with peanut or cashew protein or medium. Immunophenotyping and functional analysis were performed through unsupervised clustering and manual gating. Wilcoxon signed-rank test were used to compare cell subset frequencies and functional marker expression before and post-OIT, adjusted for multiple comparisons.

RESULTS: After treatment with anti-IgE and multi-OIT, the frequency of allergen specific CD25⁺CD40L⁺ T cells following peanut and cashew stimulations was significantly decreased. In contrast, an increased trend of IFN-gamma positive allergen specific cells and a significant increase of CCR4⁺CLA⁺ Th17 in CD4⁺ T cells were observed post-OIT. We also observed an increased frequency of CCR4⁺CLA⁺ Th2 effector memory cells (Th2EM) post-OIT with diminished activation markers (CD25/CD40L) expression under peanut and cashew stimulations.

CONCLUSIONS: Overall, we observed a decrease of allergen specific T cells and a shift from Th2 immunity toward a Th1/Th17 response in response to both peanut and cashew stimulation after multi-OIT treatment. Increased frequency of CCR4⁺CLA⁺ Th2EM cells post-OIT suggests possible Th2 cell proliferation and tissue homing during OIT.