

**591** A Phase II study of LP-003, a novel high-affinity, long-acting anti-IgE antibody for allergic rhinitis

Xueyan Wang<sup>1</sup>, Haiyun Shi<sup>1</sup>, Ruowen Guo<sup>2</sup>, Hongzhou Yang<sup>2</sup>, Heng Liu<sup>2</sup>, Lisha Liphysician<sup>3</sup>, Kai Guan, MD<sup>4</sup>; <sup>1</sup>Beijing Shijitan Hospital, <sup>2</sup>Longbio Pharma (Suzhou) Co., Ltd, <sup>3</sup>Peking Union Medical College Hospital, <sup>4</sup>PUMC Hospital.

**RATIONALE:** Allergic rhinitis (AR) is a common IgE-mediated disorder that affects large population worldwide. Omalizumab was the only approved anti-IgE antibody for several allergic diseases. However, due to Omalizumab's dosing regimen and high price, its application in AR is strictly limited. Thus, a new anti-IgE antibody with better efficacy, lower dosing, longer half-life and competitive pricing and compliance is worth to be investigated.

**METHODS:** 180 adult patients with moderate to severe seasonal AR despite standard therapy in the previous 2 seasons were randomized to receive anti-IgE antibody/LP-003 or placebo in 2:1 ratio (LP-003 n=120, placebo n=60). All patients received concomitant nasal corticosteroids with/without antihistamines as SoC. The primary endpoint was the mean nasal symptom score during the peak pollen period (PPP). Secondary endpoints included mean ocular symptom score and safety profile. PK, PD and ADA were also tested.

**RESULTS:** LP-003 treatment group had significantly lower nasal and ocular symptom scores compared with placebo group ( $P<0.05$ ). Differences in scores for individual nasal and ocular symptoms were also statistically ( $P<0.05$ ) and clinically significant. No unexpected safety issues were observed.

**CONCLUSIONS:** In patients with moderate to severe AR, LP-003 added to SoC demonstrated better efficacy in improving symptoms and was well tolerated. These results indicate that LP-003 renders a promising therapeutic option for AR.

**592** Day 3 Readings Can be Omitted from Patch Testing: Medium-Sized Healthcare System Experience

Katheryn Bell<sup>1</sup>, Macy Happe<sup>2</sup>, Sona Veeraraghavan<sup>3</sup>, Trenton Goffinet<sup>3</sup>, Majed Koleilat, MD<sup>4</sup>; <sup>1</sup>Indiana University School of Medicine, <sup>2</sup>DePaul University, <sup>3</sup>University of Southern Indiana, <sup>4</sup>Deaconess Clinic.

**RATIONALE:** Nickel, chromium, and cobalt are common allergens causing metal-induced allergic contact dermatitis (ACD), which is an issue with increasing prevalence. The scheduled assessment, historical intake, and number of metals used in patch testing vary considerably, with vague direction provided from the outdated practice parameters.

**METHODS:** A blinded retrospective chart review of 157 patients in a single outpatient allergy clinic from 7/2020-23 referred for evaluation of ACD due to metals. Questions used to evaluate the patient dataset revealed individual symptomatology, characteristics of historical reactions, purpose for visit, patch testing results, and positive test days.

**RESULTS:** 73.7% of positive results are attributed to nickel, palladium, and cobalt, in order of prevalence. There is an association between patients presenting with oozing ( $p=0.0227$ ) and lesions/blistering ( $p=0.0011$ ) and positive test results, but not with swelling, itch, or rash. Both patients with problematic (64%) and unproblematic (83%) metal implants have higher ACD rates. Unproblematic implants ( $p=0.0027$ ) are more suggestive of a future metal allergy. On day 7, 98.4% of allergens tested positive. One patient (1.6% of positive results) tested positive on day 3 with resolution by day 7. 43.3% of patients did not react until after day 3.

**CONCLUSIONS:** Day 7 readings are essential as delayed reactions may not appear on earlier readings, whereas day 3 readings may prove unnecessary. A history of a problematic health implant and whether the patient experienced lesions/blistering or oozing are most likely to be associated with positive patch testing to metals.

**593** OIT-associated Changes in Gut Metabolites and Potential Effects on Gut Epithelial Integrity

Michael Goldberg, MD<sup>1</sup>, Michael Appel, PhD<sup>2</sup>, Nofar Asulin<sup>3</sup>, Ron Schweitzer<sup>4</sup>, Soliman Khatib<sup>5</sup>, Hadar Mor<sup>3</sup>, Liat Nachshon, MD<sup>6</sup>, Sondra Turjeman<sup>7</sup>, Omry Koren<sup>7</sup>, Arnon Elizur, MD<sup>8</sup>; <sup>1</sup>Institute of Allergy and Immunology, Shamir Medical Center, <sup>2</sup>Institute of Allergy Immunology and Pediatric Pulmonology, Shamir Medical Center, <sup>3</sup>The Azrieli Faculty of Medicine, Bar Ilan University, <sup>4</sup>Migal-Galilee Research Institute, Kiryat Shemona, Israel, <sup>5</sup>Migal-Galilee, Research Institute, Kiryat Shemona, Israel, <sup>6</sup>Institute of Allergy and Immunology, Shamir Medical Center, <sup>7</sup>The Azrieli Faculty of Medicine, <sup>8</sup>Institute of Allergy, Immunology & Pediatric Pulmonology, Shamir Medical Center.

**RATIONALE:** Gut microbiome composition and associated metabolites are implicated in the persistent food allergic (FA) state, contributing to perturbations in gut permeability. Reduced short chain fatty acid (SCFA) stool levels are associated with FA, and *Prevotella copri* and *Bacteroides* species contribute to the increased acetate observed in the stool of non-allergic subjects. Our objective was to investigate stool metabolite changes in patients undergoing walnut oral immunotherapy (OIT), and to evaluate their potential effects on gut integrity.

**METHODS:** Paired stool samples were obtained from patients undergoing walnut OIT (n=17), at treatment inception and at completion, and were assayed by liquid chromatography-mass spectrometry for metabolite composition. Caco-2 intestinal epithelial cells grown to confluence were treated with SCFAs, walnut derived metabolites, or with heat killed *Bacteroides fragilis* (HKBF) for evaluation of effects on tight junction (TJ) gene expression.

**RESULTS:** One hundred eighty-nine metabolites, were enriched in the post-OIT stools compared to those taken before treatment, including eleven derivatives of SCFA (acetate, n=5; valerate, n=3; propionate, n=2; and butyrate, n=1). One of the most highly differentially increased metabolites was 5-Hydroxyindoleacetic acid (5-HIAA). Application of sodium butyrate and sodium propionate increased Caco-2 expression of Occludin and ZO-1, whereas HKBF increased expression of Claudin 1. Treatment with 5-HIAA (10 $\mu$ M) induced expression of TJ genes over untreated cells (4.4, 1.9, 29.2 increased fold expression for Claudin1, Occludin, and ZO1, respectively).

**CONCLUSIONS:** Gut metabolites comprised from SCFA are generated following walnut OIT. They may act alongside associated microbiota to promote gut epithelial integrity.