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Food-Specific Antibodies Reflect Inflammation and Antigen Removal in Eosinophilic Esophagitis

Abstract: Food antigens commonly trigger eosinophilic esophagitis (EoE), and to date, there are no accurate tests to identify food triggers. Patients undergo empirical elimination diets that are burdensome, time-consuming, and costly, with varying ability to identify trigger foods. In recent studies, elevated food-specific IgG4 in serum has been associated with active disease and trigger foods in EoE. We developed a custom multiplex food-specific assay that measures antibody reactivity to multiple whole foods. Utilizing this assay, we found that secretions from the esophageal mucosa of patients with EoE have a distinct localized food-specific antibody repertoire. Here, we aimed to assess the antibody responses to top trigger foods in the esophageal secretions and serum of patients with EoE to determine if markers can differentiate disease activity and identify trigger foods. Food-specific IgA, IgG1, IgG4, IgM, and IgE antibodies were measured for top trigger foods (cow milk, wheat, egg, and soy) using Luminex MagPix. We found associations with food-specific IgA, IgG1, and IgG4 with active disease. Our results suggest that antibody reactivity levels have the potential to be used as a marker for EoE inflammation and food exposures with the prospective to inform tailored elimination diets to patients.

Keywords: Eosinophilic Esophagitis, Biomarker, Food Allergy, Antibody Repertoire, Diet

Biography: Ashley Pyne, PhD, RDN, CNSC, is a dietitian-researcher involved in clinical laboratory work focused on Eosinophilic Gastrointestinal Disorders (EGID). Working closely with patients as a dietitian inspired her interest in the mechanisms of diet. Her research focuses on investigating food-specific antibodies and inflammatory markers in eosinophilic esophagitis (EoE). She received a USDA National Institute of Food and Agriculture grant to research of food-specific antibodies in EoE. Dr. Pyne is passionate about understanding how diet affects inflammation in EGIDs and what markers or testing can be developed to manage the disease.