

# Allergy

EUROPEAN JOURNAL OF ALLERGY  
AND CLINICAL IMMUNOLOGY

Editor-in-Chief  
Cezmi Akdis

Abstracts from the European Academy of Allergy and  
Clinical Immunology Digital Congress, 06–08 June 2020

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phenological observations. Protein composition was analysed by SDS-PAGE and densitometric analyses, while the concentration of Bet v1 was evaluated by fluoroenzymeimmunoassay. The obtained results were estimated at the background of the PM10 level and the birch pollen season in Kraków

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Method: Pollen was harvested (in 2018 and 2019) from trees growing in the urban area of Évora (38.575099, -7.905611) and in the rural area 12 km outside the city, the Herdade da Mitra (38.014918). NO<sub>2</sub> was monitored by the ESA Sentinel 5P using the TROPOMI instrument. For pollen production in 2019, inflorescences were collected in phase II trees in each site. Anthers (3) from each inflorescence were collected in 70% ethanol. Microscopy slides with the prepared and pollen was counted following the standard methodology. Micro BCA Protein Assay Kit was used to determine pollen extracts. Pla α1 expression was determined by ELISA. Immunoreactive bands were identified by Western blotting from sensitized individuals.

Results: Tropospheric NO<sub>2</sub> reached 2.40x10<sup>-9</sup> mol.m<sup>-2</sup> and 2.35x10<sup>-9</sup> mol.m<sup>-2</sup> in Mitra (Fig. 1). The average concentration was similar in both sites, but the dispersion of higher in Évora (Évora: 10.977–39.273 pollen/anther, Mitra: 25.290 pollen/anther). Pollen harvested in Évora showed lower protein content (see table 1) and ~20% higher protein content (see table 1) and ~20% higher protein content (see table 1). Six IgE-reactive proteins have shown in pollen harvested in Évora (MW 73.7 ± 4.6; 47.8 ± 26.7 ± 0.4; 24.4 ± 0.9; 17.4 ± 0.6 kDa), three of those to known allergens Pla α1 (~48 kDa confirmed by Western blotting) and Pla α8 (~17 kDa).

Conclusion: These results show that, despite its proximity, a higher concentration of air pollutants in urban environments and this is affecting plant pollen protein chemistry, including the augmented expression of allergens. It suggests that higher allergenic pollen in urban environments due to the highest prevalence of respiratory allergens.

	Évora	Mitra	Évora
Protein content, µg/mg pollen	96	490	103.7 ± 4.2
Pla α1 content	330	702	56.2 ± 5.1



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DPL normalized expression of genes associated with fibrosis, remodeling, and barrier function (Figure). DPL downregulated the expression of collagen genes, including COL4A3, COL4A4, COL4A6, COL8A2, COL14A1, COL21A1, and periostin (POSTN), an extracellular matrix protein associated with fibrosis. DPL treatment downregulated fibrinogen (FBG), desmoglein 1 (DSG1), SPINK8, and SPINK9, which are associated with an intact epithelial barrier. Conclusion: In this phase 2 dupilumab study, EoE patients showed a significant reduction in airway hyperinflation and symptoms. Dupilumab treatment did not induce any significant gene expression changes. Conclusion: In this phase 2 dupilumab study, EoE patients showed a significant reduction in airway hyperinflation and symptoms. Dupilumab treatment did not induce any significant gene expression changes.

1154 | Eosinophilic gastrointestinal immunotherapy in a randomized controlled trial

Chinthrajah RS; Fernandez-Becker N; Kao S; Zhang W; Boyd S; Manohar M; Galli SJ; et al. *Journal of Allergy and Clinical Immunology* 2020;145:1154-1162

Background: Oral immunotherapy (OIT) is promising for the treatment of food allergy; however, gastrointestinal side effects are common and eosinophilic esophagitis (EoE) is a potential complication. In a randomized controlled trial involving peanut OIT, we aimed to characterize eosinophilic gastrointestinal responses.

Method: Twenty adult subjects with peanut allergy were randomized to peanut OIT (n = 15) and placebo (n = 5); one additional subject withdrew before randomization. Serial gastrointestinal biopsies were obtained at baseline (n = 21, 0 weeks), following dose escalation (n = 10, 52 weeks), and maintenance (n = 12, 104 weeks). Endoscopic findings were characterized using the EoE endoscopic reference score (ERES). Biopsies were assessed for eosinophils per high-power field (eos/hpf) and other pathologic features using EoE Histologic Scoring System (EoEHSS). Immunohistochemical staining for eosinophil peroxidase (EPX) was performed and quantified using automated image analysis.

Results: No subjects reported gastrointestinal symptoms at baseline; however, all subjects had dilated intercellular spaces and 3 participants had ≥ 15 eos/hpf (esophagus). Peanut OIT induced significant transient eosinophilic inflammation at 52 weeks in the proximal, middle, and distal esophagus; whereas no significant changes were seen in the placebo arm. These changes corresponded with

0756 | Can the birch pollen be more aggressive in the polluted environments?

Ziemianin M<sup>1</sup>; Myszowska D<sup>2</sup>; Waga J<sup>2</sup>; Skoczowski A<sup>3</sup>; Czarnobilska E<sup>4</sup>

<sup>1</sup>Department of Clinical and Environmental Allergy, Jagiellonian University Medical College, Kraków, Poland; <sup>2</sup>University of Agriculture in Kraków, Kraków, Poland; <sup>3</sup>Pedagogical University of Kraków, Kraków, Poland

Background: Chemical components of air pollution can influence plant pollen in two different ways (i) directly, causing some changes in the surface morphology of pollen, facilitating the penetration of inorganic particles and the release of the natural allergens; (ii) indirectly through the modification of secondary structure of birch pollen allergenic proteins. The aim of the study was to estimate the variability in the protein content and their subunits composition of pollen collected from the birch trees growing in environments differentiated regarding the air pollution levels.

Method: The study was performed in southern Poland in 2019. Male inflorescences were collected from the 20 selected sites (3 trees per each) before pollen release estimated based on

0959 | Serum levels of soluble interleukin-2 receptor and thymus and activation-regulated chemokine in non-IgE-mediated gastrointestinal food allergies

Arakawa N; Takizawa T; Yagi H; Ishige T; Yamada S; Sato K; Nishida Y; Tatsuji M; Arakawa H

Department of Pediatrics, Gunma University Graduate School of Medicine, Maebashi, Japan

Background: Non-IgE-mediated gastrointestinal food allergies (non-IgE-GI-FAs) is characterized by gastrointestinal symptoms: vomiting, diarrhea and bloody stools. Although its pathology is unclear, non-IgE-GI-FAs are associated with elevated serum level of proinflammatory cytokines. During searching for genes specifically associated with pathology of non-IgE-GI-FAs, we found that mRNA levels of interleukin (IL)-2 receptor (IL-2R) α and thymus and activation-regulated chemokine (TARC) were elevated in antigen-stimulated peripheral blood cells of non-IgE-GI-FAs patients. However, little is known about whether IL-2Rα and TARC are elevated at protein levels in serum of patients with non-IgE-GI-FAs and associated with its disease status.

Method: Five patients with non-IgE-GI-FAs were retrospectively recruited at Gunma University Hospital from 2011 to 2015, whose serum had been collected at the onset and remission phases, and

stored. The patients were diagnosed based on the results of elimination and provocation test, and lymphocyte stimulation test. Serum samples from 4 healthy controls were also used. Soluble IL-2R (sIL-2R) and TARC concentrations were determined with enzyme-linked immunosorbent assay. Severity of the patients was graded according to the literature (Yagi et al. *Allergo Int* 2019). The study was approved by the ethics committee of Gunma University Hospital.

Conclusion: In this phase 2 dupilumab study, EoE patients showed a significant reduction in airway hyperinflation and symptoms. Dupilumab treatment did not induce any significant gene expression changes.



Conclusion: In this phase 2 dupilumab study, EoE patients showed a significant reduction in airway hyperinflation and symptoms. Dupilumab treatment did not induce any significant gene expression changes.

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ALLERGY, (ISSN 0105-4538), is published monthly. US mailing agent: Mercury Media Processing, LLC, 1850 Elizabeth Avenue, Suite #C, Rahway, NJ 07065 USA. Periodical postage paid at Rahway, NJ.

Postmaster: Send all address changes to ALLERGY, John Wiley & Sons Inc., C/O The Sheridan Press, PO Box 465, Hanover, PA 17331.

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ISSN 0105-4538 (Print) ISSN 1398-9995 (Online)

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Volume 75 • Supplement 109 • August 2020

**Abstracts from the European Academy of Allergy and  
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