

## 605 Asteraceae Pollen Rainfall Comparison in Four South American Cities



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**RATIONALE:** Weed pollen comes from different species that do not belong to the tree and grass families. The Asteraceae family is the most allergenic within weeds, and several species from them are identified in the pollen count and could cause allergic rhinoconjunctivitis.

**METHODS:** This work aimed to compare the Asteraceae pollination from January 1st to December 31st, 2020, in the cities of Bahía Blanca (Argentina), Lima (Peru), Asunción (Paraguay), and Santiago (Chile). Expressed data as weekly averages of pollen grains/m<sup>3</sup> of air.

**RESULTS:** The Asteraceae have a very similar pollination cycle, with peaks of different city's magnitude, always at the same time for Bahía Blanca, Santiago, and Asunción. Standing out between the first and fourth week of March, and then again between the fourth week of October and the fourth week of December. Pollination in Lima remains with moderate pollen abundance between the first week of July and the fourth week of September, then declining the rest of the time. During this period, no Asteraceae are present in the cities of Bahía Blanca and Santiago, but they do appear in Asunción, although the values are low.

**CONCLUSIONS:** This study allows us to compare the behavior of Asteraceae in different Southern Hemisphere cities, from South America. Knowing the pollen calendar of the Asteraceae and the changes in the seasonality help the patient be alert in case of a pollen rain peak, even from different cities in South America. Furthermore, tracking these calendars over time can help to study climate change worldwide.

## 606 Alpha-Gal Allergy and Mast Cell Hyperactivity Overlap



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**RATIONALE:** Galactose-alpha-1,3-galactose (alpha-gal) allergy is often initially misdiagnosed as chronic urticaria or idiopathic anaphylaxis (here collectively referred to as mast cell hyperactivity [MCH]). However, a subset of alpha-gal allergic patients also have concurrent MCH. Here we compare characteristics of these populations.

**METHODS:** Within our practice, we identified a cohort of 65 patients with alpha-gal allergy, fourteen of whom also have MCH. Medical record review was performed to compare age, gender, alpha-gal IgE, other atopic conditions, comorbidities, and tick bite history.

**RESULTS:** Patients with alpha-gal allergy and MCH, as compared to those with alpha-gal allergy alone, were more likely to have GERD (64% vs 33%,  $p=0.03$ ), migraine (21% vs 4%,  $p=0.03$ ), psychiatric diagnosis (57% vs 27%,  $p=0.04$ ), multiple psychiatric diagnoses (34% vs 12%,  $p=0.03$ ), and stinging insect allergy (33% vs 2%,  $p=0.001$ ). Although both groups were equally likely to have other atopic disease (79% vs 76%,  $p=0.87$ ), those with MCH were more likely to have multiple other atopic conditions (50% vs 20%,  $p=0.02$ ). There was no significant difference in average age (42.5 vs 48.6 years,  $p=0.26$ ), initial alpha-gal IgE (6.41 vs 16.05,  $p=0.21$ ), diabetes (7% vs 8%,  $p=0.93$ ), hypertension (7% vs 24%,  $p=0.18$ ), or cardiovascular disease (0% vs 12%,  $p=0.18$ ). Although the difference was not significant, patients with both alpha-gal and MCH are

more likely to be female (71% vs 53%,  $p=0.22$ ). Greater than 90% of both groups reported previous tick bite.

**CONCLUSIONS:** Combined alpha-gal and MCH is associated with increased prevalence of GERD, migraine, psychiatric conditions, and multiple other atopic conditions.

## 607 Co-localization of Immunoglobulin G4 (IgG4) and milk proteins is associated with Eosinophilic Esophagitis (EoE) disease activity



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**RATIONALE:** IgG4 has been shown to co-localize with food proteins in the esophageal tissue of EoE patients. We hypothesized that this co-localization is associated with EoE disease activity.

**METHODS:** This was a pilot study of patients enrolled in the UVA EoE Cohort. Esophageal biopsies were collected from individuals with a) active EoE, b) remission (swallowed steroids), c) remission (diet), d) non-EoE controls. Immunofluorescence was performed using primary antibodies directed against IgG4 and milk (Bos d 5) proteins, and images were captured using a Leica confocal microscope. The percentage of each fluorophore (IgG4, Bos d 5, co-localization) was scored as 0 (none), 1 (0.1–5%), 2 (6–10%), 3 (11–25%) and 4 (>26%) and combined into a cumulative score. Co-IP was performed to assess direct interactions between IgG4 and Bos d 5. Between-group comparisons were made using Mann-Whitney U tests.

**RESULTS:** Immunofluorescence was performed on 20 esophageal biopsies ( $n=5$  in groups a-d). IgG4-milk deposits were present in patients with active EoE (mean cumulative score 9.33), but were significantly decreased in patients in remission on swallowed steroids (1.0;  $p=0.003$ ) or diet (3.3;  $p=0.02$ ), and controls (3.0;  $p=0.008$ ). Two patients (1 active EoE/1 control) were included in the co-IP study. A 36 kDa protein was detected in the IgG4 pull-down of the EoE patient, representing a dimer of Bos d 5, which was not seen in the non-EoE control.

**CONCLUSIONS:** IgG4-milk co-localization appears to be associated with EoE disease activity, and direct interactions may occur between IgG4 and milk proteins. Whether these deposits contribute to the underlying inflammation of EoE remains unknown.