Session number: TPS 25
Session title: Molecular profiles of sensitisation
Abstract number: 1045

European Academy of Allergy and Clinical Immunology
EAACI Congress 2018
26 – 30 May 2018
Munich, Germany

Molecular allergy explorer test based on new state-of-the-art multiplex nano-bead technology in *Asteraceae*-hazelnut association

Authors

Florin-Dan Popescu [1,2], Mariana Vieru [1,2]
Carmen Saviana Ganea [2]

[1] *Carol Davila* University of Medicine and Pharmacy, Department of Allergology, Bucharest, Romania
[2] *Nicolae Malaxa* Clinical Hospital, Department of Allergology and Clinical Immunology, Bucharest, Romania

No conflict of interest regarding this presentation to declare
Written informed consent obtained from the patient for presentation and publication

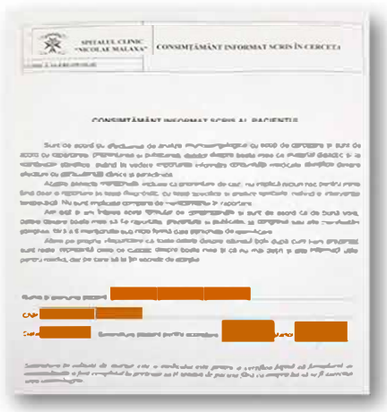
Asteraceae pollen-food syndromes and associations

Syndrome or association	Allergen components possible/relevant
Mugwort-celery-spice syndrome	Art v 4 profilin (CR Api g 4, Dau c 4); Art v 60 kDa (homologue to Api g 5)
Mugwort-peach association	Art v 4 profilin (CR Pru p 4); Art v 3 LTP (CR Pru p 3)
Mugwort-chamomile association	Art v 1 defensin; HMW allergens; Mat c 1 (Bet v 1 homologue)
Mugwort-sunflower association	Hel a 4 (Art v 1-like allergen); Hel a 3 LTP (homologue Art v 3 LTP)
Mugwort-mustard syndrome	Art v 3 LTP (CR Sin a 3); Art v 4 profilin (CR Sin a 4); Art v 60 kDa
Ragweed-melon-banana association	Amb a 6 LTP (CR Cuc m LTP); Amb a 8 profilin (CR Cuc m 2, Mus xp 1)
Asteraceae-lychee association	Amb a 8, Art v 4 profilins (CR Lit c 1)

[*Popescu FD. Cross-reactivity between aeroallergens and food allergens. World J Methodol. 2015; 5(2): 31-50*]

Case report and methodology

28-year-old female patient from Southern Romania with fall **seasonal allergic rhinoconjunctivitis**, history of two episodes of **anaphylaxis** to ingestion of **hazelnuts** and **sunflower seeds**, and **contact angioedema** to **pot marigold**.



Molecular allergy diagnosis performed using a new *in vitro* **multiplex allergy explorer test** allowing simultaneous measurement of

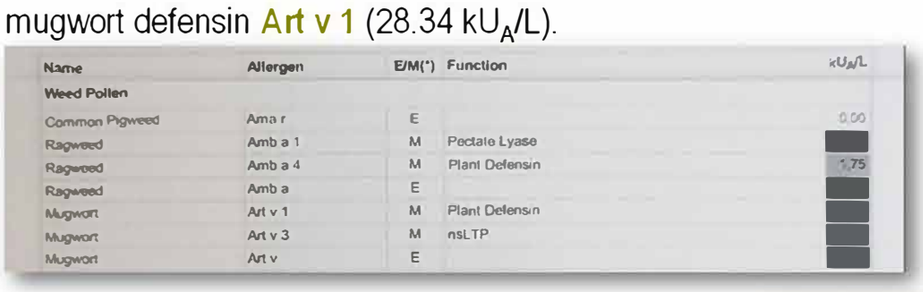
- *serum specific IgE* against a plethora (282) of 156 allergen extracts, 126 molecular allergens,
- based on *nano-bead technology*, with
- *immunoassay* protocol integrating powerful CCD inhibitor during serum incubation
- results quantification based on *colorimetric* image acquisition

MacroArray Diagnostics, Vienna, Austria

Molecular serum biomarkers for genuine sensitization to *Asteraceae* weed pollen

detected as specific IgE to

- ragweed pectate lyase **Amb a 1** (46.37 kU_A/L) and
- mugwort defensin **Art v 1** (28.34 kU_A/L).



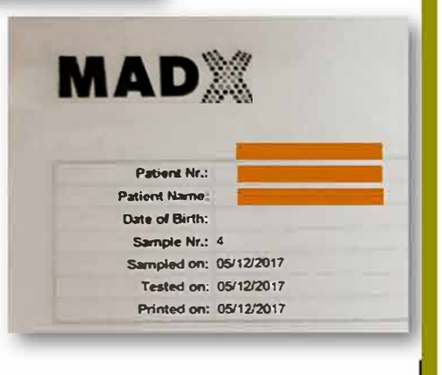
Name	Allergen	E/M(*)	Function	kU_A/L
Weed Pollen				
Common Pigweed	Ama r	E		0.00
Ragweed	Amb a 1	M	Pectate Lyase	
Ragweed	Amb a 4	M	Plant Defensin	1.75
Ragweed	Amb a	E		
Mugwort	Art v 1	M	Plant Defensin	
Mugwort	Art v 3	M	nsLTP	
Mugwort	Art v	E		

No sensitizations were found (<0.3 kU_A/L) to other region relevant pollen-specific molecular allergens from

- weeds (Pla l 1), grasses (Phl p 1, Phl p 5.0101),
- trees (Bet v 1, Cor a 1.0103, Fra e 1, Pla a 1)

or to cross-reactive

- polcalcins and profilins (Phl p 7, Phl p 12, Bet v 2).



Molecular allergy profile in the association case report

High serum specific IgE levels to **non-specific lipid transfer proteins** (nsLTP)

- hazelnut **Cor a 8** (1.1 kU_A/L) and mugwort pollen **Art v 3** (27.07 kU_A/L), a similar LTP being also present in sunflower seeds (Hel a 3).

Nuts				
Hazelnut	Cor a 8	M	nsLTP	1,10

- Specific IgE to ragweed pollen **Amb a 4** was detected (1.75 kU_A/L), this Art v 1-like defensin being homologous with sunflower Hel a 4 defensin.
- Amb a 1-like **Hel a 6** present in sunflower pollen must be mentioned, because pollen contamination of sunflower seeds was not excluded.

- No sensitization was found to **hazelnut storage proteins** (<0.3 kU_A/L): 11S globulin Cor a 9, 7/8S globulin Cor a 11 and 2S albumin Cor a 14.

Additional relevant *in vivo* allergy tests

positive skin prick tests to

- commercial extracts of
  - **hazelnuts** (3 mm diameter wheal)
  - ***Helianthus annuus*** pollen (8 mm wheal)
- ***Calendula officinalis* flores**

pulvis suspension 30 mg/mL (4 mm wheal)

Conclusion

We propose the use of a new allergy term:
***Asteraceae*-hazelnut association**
to describe the cross-reactive nsLTP IgE-mediated *Asteraceae* weed pollinosis-associated hazelnut food allergy,

and we suggest that multiplex
ALLERGY EXPLORER test assesses its molecular diagnosis