Phl p1, Phl p 5 in ambient aerosol and grass pollen counts in Madrid, Spain during 2009 and 2010

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Premio Mejor comunicación

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Disclosure

In relation to this presentation, I do not declare any conflicts of interest.

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BACKGROUND:

It has been shown that the patient pollinosis symptoms correlated well with the pollen counts.

However, different studies have confirmed the presence of allergenic activity outside the pollination period.

Therefore, it has been suggested that the pollen counts does not include the total allergen exposure.

This suggests that other sources of allergens, in addition to the pollen grains, may constitute a relevant allergen load .

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In Madrid, taking the most clinically relevant pollen types, the year is divided into four periods:

- November to March: *Cupressaceae* pollens in the atmosphere;
- March-April: *Platanus;*
- May and June: *Poaceae* and *Olea*;
- July to October: *Chenopodiaceae-Amaranthaceae*.

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OBJECTIVE:

To analyze the correlation between grass pollen counts and Phl p 1 and Phl p 5 allergen concentrations in Madrid, Spain during the period from March 2009 to July 2010.

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METHODS:

Hirst-type volumetric trap and Burkard Cyclone samplers were used for pollen counts and aeroallergen capture, respectively.

The quantification of Phl p 1 and Phl p 5 allergens was performed using specific 2-site antibody ELISA.

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METHODS:

Burkard seven-day recording volumetric spore trap

10 lpm

Burkard cyclone sampler

16,5 lpm

100% > 1,06 µm

93,82%: 0,82-0,75 µm

Madrid (Barrio Salamanca)

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METHODS:

Particles were collected directly into a 1.5 mL Eppendorf vial.

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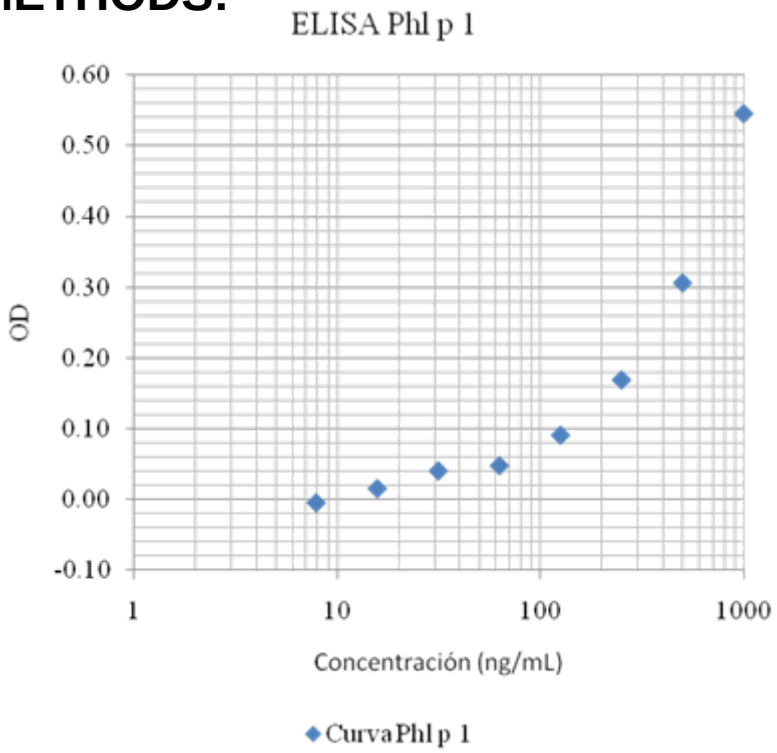
METHODS:



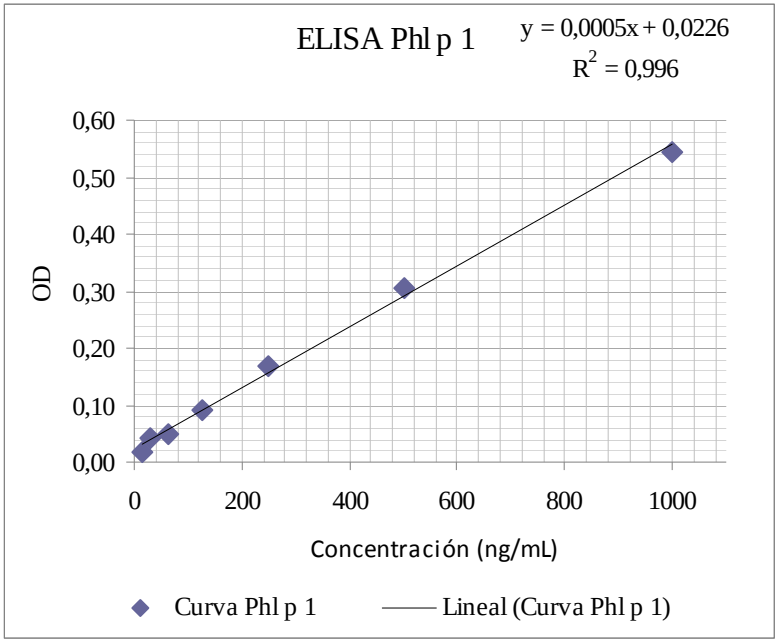


Fig 1. Dose-response curve of linked immunosorbent assay (ELISA) for Phl p 1 and regression line with its equation.
Detection limit: 6 ng/ml. Intra-assay VC: <8%.

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METHODS:

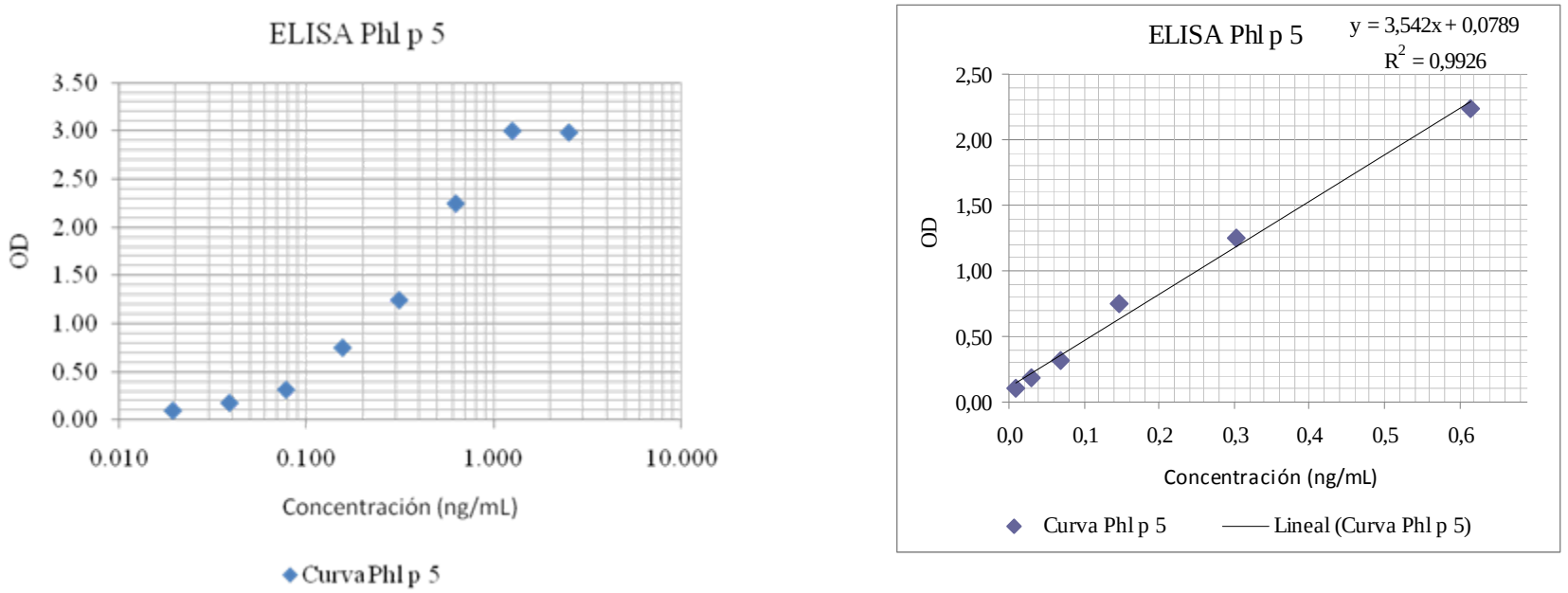

Fig 2. Dose-response curve of linked immunosorbent assay (ELISA) for Phl p 5 and regression line with its equation.
Detection limit: 0,16 ng/ml. Intra-assay VC : <7%.

Phl p1, Phl p 5 in ambient aerosol and grass pollen counts in Madrid, Spain during 2009 and 2010

RESULTS:

Good correlation between pollen grains and Phl p1 and Phl p 5 levels (r=0.63 and 0.70, respectively, p <0.00001) throughout the study period.

Main allergenic activity during 2009 was detected May 19th (pollen count: 73 grains/m^3/d; Phl p 1: 15.79 ng/m^3/d and Phl p 5: 0.24 ng/ m^3/d)

During 2010 on May 24th (pollen count: 324 grains/m^3/d, Phl p1: 38,9 ng/m^3/d and Phl p 5: 1,56 ng/ m^3/d).

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RESULTS: Phl p 1

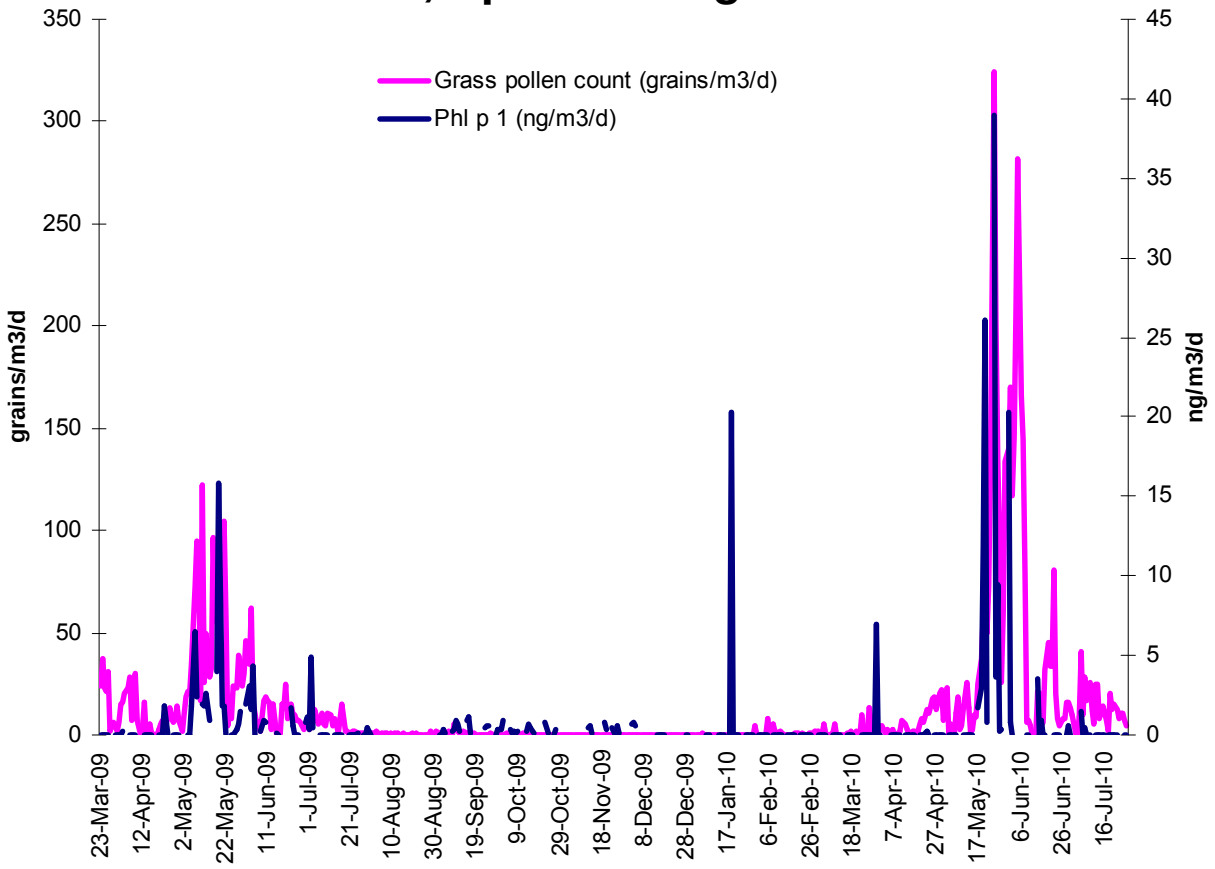

Fig. 3. Phl p 1 appearance and grass pollen counts (2009-2010).

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RESULTS:
Phl p 5

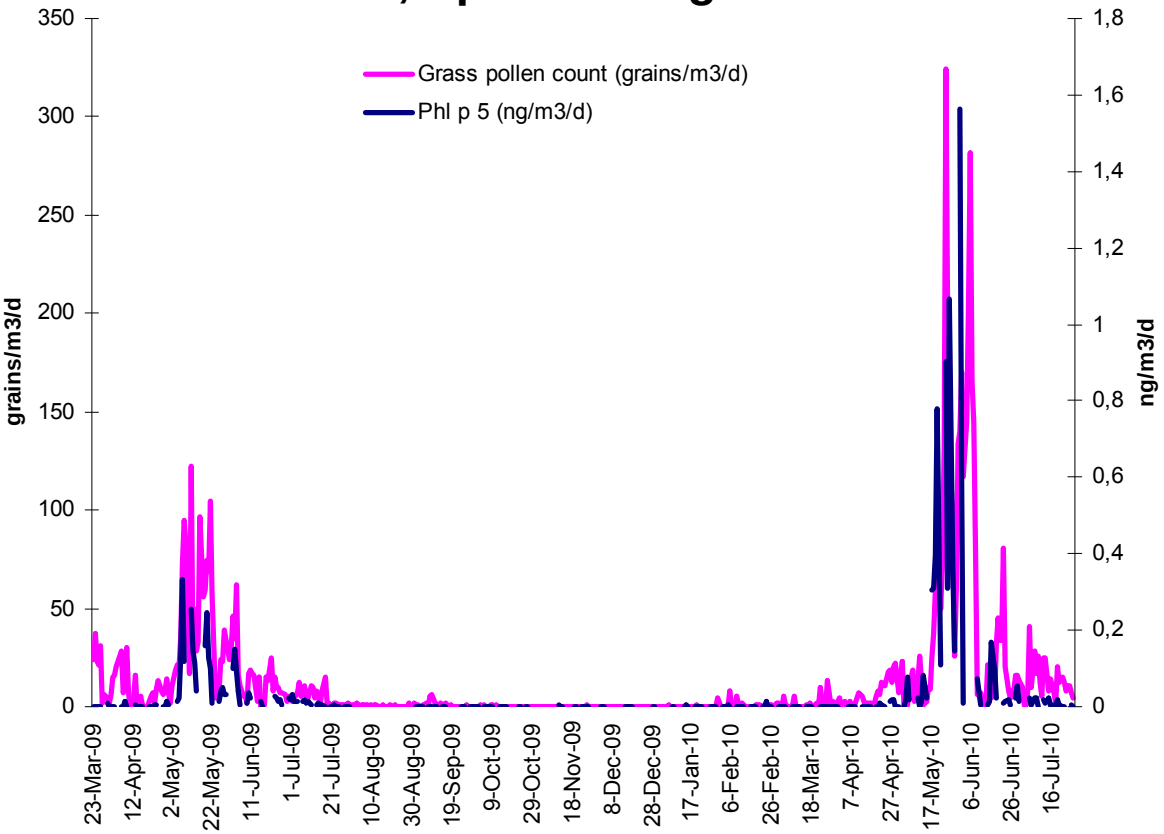

Fig. 4. Phl p 5 appearance and grass pollen counts (2009-2010).

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RESULTS:

Significantly higher pollen levels were detected during the pollen season of

2010 (from April 19th to July 27th, mean pollen counts: 40 grains/m3) *versus*

2009 (from March 23rd to July 17th, mean pollen counts: 19 grains/m3)

(r: 0.33, $p<0.001$).

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CONCLUSIONS:

The atmospheric presence of Phl p 1 and Phl p 5 is restricted to the period of grass pollen in the air.

Significant variations in pollen and allergen levels were observed between 2009 and 2010.

The combination of pollen counts and allergen levels provide a valuable tool for the follow up of grass allergic patients.

There were significant differences in grass pollen counts and aeroallergen levels in 2009 and 2010 in Madrid, Spain.