GRASS Phl p5 AEROALLERGEN QUANTIFICATION IN OUTDOOR AIR SAMPLES: CORRELATION WITH POLLEN COUNTS

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Currently allergen exposure is estimated from pollen counts in air samples. However, there is not yet enough evidence to establish this technique as a reliable indicator of allergen exposure. Presently, there are a few reliable and sensitive ELISA methods that allow allergen quantification in environmental air samples but none is known to quantify *Poaceae* allergens.

The aim of this work was to develop a novel approach to quantify Phl p5, one of the main allergen from *Phleum pratense*.

Samples of airborne pollen were collected on a meteorology platform at Évora using a "cyclone" technology collector (Coriolis®δ, Bertin Technologies, France). Pollen counts and Phl p5 content were determined using an established protocol (project MONALISA) and a modified ELISA method, respectively.

Several approaches to boost the sensitivity of the established ELISA method towards lower [antigen] were undertaken. Antibody dilution and higher incubation periods were introduced. As a result, the sensitivity limit of the standard curve was slightly enhanced (>10ng/mL to <6ng/mL). Sample concentration by ultrafiltration was also investigated. Although detectable, antigen quantification was mostly not achieved. Finally, samples were brought within sensitivity limits by adding a constant amount of standard. The [Phl p5] varied between <1ng/mL and 8ng/mL, values unquantifiable using the established methodology. During *Poaceae* pollen season, Phl p5 contents showed a positive correlation with pollen counts.

In conclusion, quantification of airborne Phl p5 antigen was achieved and its content was correlated with the pollen counts. Therefore, this methodology may, in the future, contribute to improve the prediction of aeroallergen exposure.

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