



Evaluation of the airborne allergens in Europe: HIALINE network

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The project HIALINE started January 2009 aiming at determining the natural variation of allergen content of pollen from birch, grass and olive, and to implement an allergen forecast system.

The project operates a representative selection of monitoring stations across Europe for birch, grass, and olives. Pollen is monitored with a HIRST-type pollen trap, whereas the allergen is collected with a Chemvol high-volume cascade impactor® and analysed using specific antibodies for the different allergens with ELISA. Quality control showed that the intra-assay variability of the methods used to determine the allergen was below 15% per station and below 25% between all European stations, which for an immunoassay is extremely good.

The monitoring efforts are accompanied with the model development and application, which is based on the SILAM system. The model is operational for birch since 2005, for grass since 2008 and was extended to olive within HIALINE. The feasibility of the direct allergen forecasting is under investigation.

The consortium is in the middle of its experiments to determine the pollen potency; whether the pollen release more (or less) allergen. Thus the same amount of pollen can release up to 10-fold different amounts of allergen. For birch pollen it is clear that allergen content of pollen is variable, but correlated well with birch pollen counts. Differences across Europe in potency of pollen to release allergen were 30-50%.

For grass pollens from France (and in 2009 also UK) are 300-400% more potent than from other stations. Finnish pollen at the beginning and the end of the season do not release any Phl p 5. Possibly, the empty grains could originate from other grass species, such as *Phragmites communis*, that is more abundant in Finland than in the rest of Europe.

Olive pollen varies about 400% across Europe in allergen potency with intensive exchange across the Mediterranean.

The project connection with the allergen symptoms of the population is established via the Web-based Pollen Hayfever Diary created by the University of Vienna.