

The Laboratory of Aeropalynology is one of the seven aerobiological monitoring sites in Poland belonging to the Polish Aerobiological Network (www.aero.cm-uj.krakow.pl). We are located in the Faculty of Biology at Adam Mickiewicz University of Poznań (central-west Poland). Currently our staff consists of six people working on different aspects of aerobiology, such as monitoring pollen and spores, making phenological observations of allergic species, modeling and forecasting pollen seasons, detecting allergens or conducting studies related with pollen vitality of endangered species. The setting up of the Laboratory (year 2004) coincided with the start of the European Union Project AEROTOP (Aerobiology to Poznan) which was managed by Dr Alicja Stach. She was the first aerobiologist who began to collect pollen data from Poznań. Due to her hard work and devotion for aerobiology our Unit has been developing rapidly during the last several years and has become one of the major aerobiological centers in Poland.

Nowadays the Laboratory of Aeropalynology obtains pollen data from two volumetric spore traps (Hirst type) located in different parts of Poznań. The first trap is situated in the city center and the second one is located in the outskirts of the city (about 8 km from the center of Poznan). The obtained pollen data are transferred to the European Aeroallergen Network Pollen Database which gathers information of more than 600 pollen counting stations from all over Europe. Next, these pollen records are graphically presented on the website www.polleninfo.org, where they are available for every interested person. Pollen information from Poznań together with weekly pollen forecasts are also published on the website of Wielkopolski Informator Pyłkowy (<http://pylki.man.poznan.pl>).

One of the main aims of our Laboratory is to inform public opinion about allergological risk in our region. Last year, in cooperation with Poznan University of Medical Sciences and financial support from Poznan City Council, the new pollen calendar for Poznań was prepared. The calendar contains the most important information which every allergic person should know, e.g. about different types of allergies, diagnosis, prophylaxis and biology and ecology of allergenic species. The most important part constitutes a graph presenting pollen seasons of the twelve most allergic taxa in Poznań, i.e. hazel, birch, oak, ash, grass or mugwort. Pollen calendars (despite of their many advantages) usually show only the average pollen data and rarely they present the temporal variation of pollen seasons. In another words, every year in every site pollen seasons look slightly different so it is very important to follow national pollen information and forecasts, and to be up to date with the freshest pollen news.

These differences in temporal variations and severities of pollen seasons could be very well observed during last year in Poznań. Even though in 2010 the first pollen grains were recorded in the air relatively late (middle of March), this particular year could be characterized as highly unfavorable and troublesome from the point of view of allergic people. The pollen grains of grass (the most allergenic species in Poland) reached one of the highest values during the last decade. Also birch pollen (the second in order of allergenic importance) reached a very high level (over 10000 grains). The interesting fact is that the concentrations of *Betula* pollen grains measured in the outskirts of the city were almost

twice as high as in the city center. The maximum daily concentration (19th of April) was almost 3500 grains/m³ (daily pollen threshold which induces allergic symptoms is only about 20-80 grains/m³). Additionally, pollen of alder (*Alnus* sp.) - another highly allergenic species in Central Europe which also easily crosses reacts with birch pollen, has reached the highest value since the last ten years (almost 7000 grains). Thus, from the middle of March when the first pollen grains of alder and hazel appeared in the air, through April (very severe birch pollinating period) till the first fortnight of July (when the daily concentrations of grass pollen were still exceeding 100 grains/m³) a very high level of allergenic pollen grains was observed in Poznań.

Only in the end of summer people suffering from pollinosis could feel a little bit of relief. Contrary to the previous species, the level of mugwort (*Artemisia* sp.) pollen grains was relatively low- one of the lowest during the last several years. In Poland, almost 15% of people are allergic to its pollen. Moreover, pollen of mugwort easily crosses reacts with highly allergenic ragweed (*Ambrosia* sp.) pollen. In 2010 *Ambrosia* pollen reached a very low level (less than 50 grains /m³ during the whole season). The highest daily values were recorded in the end of September. The last studies suggest that most of the *Ambrosia* pollen grains are transported to Poznań from distant sources, mainly from Ukraine, Slovakia or south parts of Poland. The last documented population of ragweed in Poznań was found about 20 years ago. During the last two years the Laboratory of Aeropalynology has been trying to locate possible sites where the ragweed could grow in Poznań. The research was conducted during the summer near the railroad tracks, wastelands and fields. No ragweed population was found which supports the hypothesis that most of the pollen is transported with air masses arriving from sources located outside the city.

It is not really certain if ragweed pollen causes allergy reactions in people living in Poznań, or not. To estimate the allergenic risk in the city in 2010 the new project supported by the Polish Ministry of Science and Higher Education has started. The project is focused on measuring pollen and main ragweed allergen *Amb a1* in the air. The paucimicronic aeroallergens are deposited on two different filters in high volume cascade impactor. The allergen concentration is measured by immunoenzymatic reaction. Moreover, skin prick test (SPT) and measurement of specific IgE antibodies in blood serum will be performed among people suffering from pollinosis, in cooperation with Poznan University of Medical Sciences. It will allow us to estimate the average number of people allergic to ragweed pollen in Poznań. Apart from that, it is assumed that this research will let us determine whether the ragweed pollen grains which are transported from distant sources and spend long time in the air still contain active allergenic proteins.

The method of collecting and measuring allergen concentrations in the ambient air was adopted from HIALINE project. It is European Union (Health Programme) founded project which one of the main aims is to evaluate the effects of climate diversity and change on airborne allergen exposure. The HIALINE is coordinated by the Technical University of Munich and gathers several research and academic institutions from different European countries where the detection of the most important aeroallergens Phl p5, Bet v1 and Ole e1

is performed. The description of the project with detailed objectives and possible future applications is available on the project website (www.hialine.com). In Poznań, during the season in 2010 the main allergen of birch Bet v1 and grass Phl p5 was measured. Preliminary results indicate a very similar course of pollen and allergen concentration, however some differences during the several days could be noticed. Even though it is still too early to make any generalizations or conclusions about the project, the first very interesting results obtained from all HIALINE partners indicate that it is highly important to pay greater attention to the problem of paucimicronic allergenic particles releasing from pollen grains.

The preliminary results obtained by our Laboratory were presented during all-Polish Scientific Conference "XII Days of Pollen Allergy" in Cracow- annual meeting which gathers aerobiologists and allergists from the whole Poland. Our colleagues from another units in Poland and Ukraine presented their results focused mainly on examining the temporal and spatial variations of pollen concentrations and flowering phenophases of allergic trees, detecting fungal spores by molecular analysis, and modeling the diurnal pollen pattern using different statistical methods. It is worth mentioning, that next year (3-7th of September 2012) Cracow will be a host of the 5th European Symposium on Aerobiology. The more detailed information can be found on the website www.5esa.cm-uj.krakow.pl. On behalf of the conference organizers we would like to invite you all to visit Cracow next year!

Apart from typical research activities also education of young people in the scope of aerobiology is very important for us. Every year Laboratory participates in Poznań Festival of Science and Art and conducts pollen workshops for children from secondary schools. Our University is a partner in ERASMUS Programme which is focused on developing student exchange between universities. Therefore, our Laboratory has been hosting foreign students from different parts of Europe for several years. Last year, one student from Croatia who studied at our University due to student exchange (Osijek University) wrote here her Master's thesis. Moreover, this academic year three students from Spain (from University of Cordoba and La Caruña) visited our Unit to study different aspects of aerobiology. We also cooperate with research institutes from other countries, e.g. within the frames of European projects like MONALISA, AEROTOP, HIALINE and COST (www.unifi.it/COSTEupol). Participation in one of such projects called STSM COST Action, which is focused on the exchange of young researchers between the units, enabled us to visit one of the best aerobiological centers in Europe- The National Pollen and Aerobiology Research Unit at the University of Worcester (UK) (www.pollenuk.co.uk). Thanks to several Polish and European projects in which the Laboratory of Aeropalynology attended, our unit is now well equipped with all necessary facilities for allergen detection and pollen analysis. If anyone would like to cooperate with us please contact our team!

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