745
Pollen calendar, a guide to common airborne pollen in Andalusia

Martínez-Bracero, M[1]; Alcázar, P[1]; Díaz de la Guardia, C[2]; González Minero, FJ[3]; Ruiz, L[4]; Trigo-Pérez, MM[5]; Galan, C[1]
[1]Dpto. de Botánica, Ecología y Fisiología Vegetal, Universidad de Córdoba, Córdoba, Spain; [2]Dpto. Botánica, Universidad de Granada, Granada, Spain; [3]Dpto. Biología Vegetal, Universidad de Sevilla Sevilla, Spain; [4]Dpto. Biología Animal, Biología Vegetal y Ecología, Universidad de Jaén, Jaén, Spain; [5]Dpto. Biología Vegetal, Universidad de Málaga, Málaga, Spain

Background: Pollen calendars were defined such a graph that summarizes the annual dynamics of major pollen types in one location and provide visual and accessible information of the pollen content in the air during the year. Some pollen calendars have been previously published for some cities in Europe, Spain and Andalusia. The main goal of this study is to present a pollen calendar for each of the 8 Andalusian capitals of province to understand the seasonal behaviour of different pollen types in Andalusia.
Method: This study was conducted in the different cities of Andalusia. A Hirst type volumetric spore-trap has been used for airborne pollen monitoring, during 10 years (2000–2009). The sampling method and data analysis was performed following the standard protocol proposed by the Spanish Aerobiological Network and the minimum recommendations of the European Aeroallergen Network (EAN). In this study have been represented pollen types with at least 1% of the total pollen count in the monitoring site. It has been calculated the daily average of 10 years following the Julian calendar and gathering days by tens. The different categories used in this study are those presented by Stix and Ferratti (1974).
Results: The 18 pollen types considered in this study represents more than 90% of the pollen index per city. Of from the 18 pollen types, Cupressaceae, Urticaceae, *Pinus, Quercus*, Poaceae and *Olea* exceed 1% of the total pollen count in all cities. The sequence of pollen types recorded along the year in Andalusia, from January to December, is: Cupressaceae, Urticaceae, *Populus, Acer, Platanus,* Moraceae, *Pinus, Rumex, Quercus,* Poaceae, *Plantago,* Amaranthaceae, *Olea, Mercurialis,* Myrtaceae, Palmae, *Casuarina and Artemisia. Olea* pollen type is the largest one represented in Andalusia, it supposes more than 15% of the total pollen count in all cities.
Conclusion: Pollen calendars for Andalusia show important diversity between cities. The pollen spectrum and the seasonal behaviour of the different pollen types vary by city along the year. This is due in part by the variety of the urban green spaces, and by also periurban landscapes, where species from natural vegetation or crops are represented. Pollen calendars are important for studies on air quality for the welfare of the population, offering important information for allergist, for planning the treatments along the year, and for patients suffering from pollinosis to plan their work and ludic activities.

746
Bet v 1 concentrations in the atmosphere of the Barcelona area, year 2014, and its relation with Birch and other cross-reactive pollens

Hirhish, U[1]; De Linares, C[1,2]; Belmonte, J[1,2]
[1]ICTA, Universitat Autònoma de Barcelona, Cerdanyola del Valles, Spain; [2]Dept. Biologia Animal, Biologia Vegetal i Ecologia., Universitat Autònoma de Barcelona, Unitat de Botànica, Cerdanyola del Valles, Spain

Background: Birch pollen provokes symptoms in 10- 20% of the allergic patients in northern Europe. Bet v 1 is its major aeroallergen. The small size of these particles make them capable to reach the lower parts of the respiratory system. This makes really important to monitor the daily allergenic load of Bet v 1 in the air, at the same time than the *Betula* pollen concentrations and to analyze their relationship.
Methods: Daily samples were collected using a Burkard multi-vial cyclone sampler placed in the roof of the Universitat Autònoma de Barcelona, (Bellaterra, Spain) along year 2014. The analyses were performed using Indoor Biotechnology ELISA kits. Aerobiological pollen samples were collected using a Hirst type sampler and the analyses followed the methodology proposed by the Spanish Aerobiological Network. The Spearman rank correlation test was applied to correlate Bet v 1 daily concentrations with the concentrations of birch and other pollen types showing cross-reactivity.
Results: Our results show that Bet v 1 allergen is present in the atmosphere of Barcelona and showing a similar dynamics than *Betula* pollen. Both variables presented the maximum values in the same day (April 12th; 39.2 pollen/m^3 and 75 pg of allergen/m^3) and were positively and significantly correlated (0.448; $P < 0.01$). Bet v 1 showed also positive correlation with *Pistacia* (0.398; $P < 0.01$), and deciduous *Quercus* (0.351; $P < 0.01$) pollen. However, Bet v 1 was also measured in days where no birch pollen was observed.
Conclusions: The presence of Bet v 1 in such high concentrations can elicit allergenic symptoms in the area of Barcelona (Spain). Therefore the combination of aerobiological data with airborne allergenic load data is helpful to reliably asses the risk of allergy and asthma exacerbation in Barcelona.

747
Validation of birch pollen distribution in an Allergen Challenge Theatre

Yang, WH; Kelly, S; Karsh, J; Perrins, R; Yang, J
Red Maple Trials Inc., Ottawa, Canada

Background: Birch pollen is a common cause of allergic rhinitis but variability in the duration and intensity of the pollen season complicate the assessment of treatment effectiveness. Allergen challenge facilities expose sensitive subjects to stable allergen levels in a controlled environment, reduce variability in clinical symptoms and facilitate the evaluation of medication effectiveness.
Method: We performed a technical evaluation of the capabilities of the Red Maple Trials Allergen Challenge Theatre™ (ACT) -an allergen challenge facility-to generate a consistent, stable birch pollen concentration. The ACT is a 4-zone facility holding up to 100 seats in a series of elevated rows. Birch pollen (*Betula populifolia*) was injected into the air supply and blown into the facility through ducts located across the top of the front wall. We measured birch pollen concentrations with 3 impact samplers (IS) and 3 laser particle counters (LPC) positioned 1.5 m above floor level. A fourth LPC measured pollen concentrations at ceiling level near the supply duct and served to control the pollen generator. The relationship between IS and LPC pollen counts was determined from 15-min measurements as pollen levels were increased in steps of 1000 from 1000 to 6000 grains/m^3. Uniformity of pollen levels was determined from LPC readings in different parts of the room. Long-term stability was assessed from continuous LPC recordings at a constant pollen concentration.
Results: A very close linear relationship was achieved between the LPCs and the IS (controller LPC, R^2=0.999; room LPCs, R^2 = 0.970). Pollen counts were within ±500 from side to side and ±600 front to back. Birch pollen supply levels were constant at (3992 ± 370) for 190 min.
Conclusion: The Red Maple Trials ACT demonstrated the capacity to achieve and maintain birch pollen levels of 4000 grains/m^3 throughout the room consistent with those reported in the literature and associated with the ability to induce symptoms of appropriate intensity. Pollen counts measured by LPC and IS were tightly correlated.