



Short communication

Airborne allergenic pollens in Padua: 1991–1996

Marina Giorato¹, Francesca Lorenzoni¹, Anna Bordin², Giuseppe De Biasi², Carla Gemignani², Michele Schiappoli² & Guido Marcer^{2*}

¹Department of Biology, University of Padua, Italy; ²Department of Occupational Health, University of Padua, Italy

(* Author for correspondence, e-mail: guimar47@ux1.unipd.it; fax: +39 498212542)

Received 11 February 1999; accepted in final form 15 May 2000

Key words: aerobiological monitoring, allergenic flora, pollen

Abstract

Graminaceae, Urticaceae, Compositae, Betulaceae, Corylaceae and Oleaceae are the most representative allergenic taxa in Italy. In this paper the airborne pollen counts of the main allergenic families collected for a six-year period (1991–1996) in Padua's area were analysed. We observed a significant variability for all allergenic pollen types considered.

1. Introduction

The aim of this study was to analyse the annual variations of cumulative pollen counts and pollination periods of the main allergenic families (Corsico et al., 1999) in order to ascertain whether length and intensity of allergic symptoms season could be predicted.

2. Materials and methods

The airborne pollen counts of Graminaceae, Urticaceae, Compositae, Betulaceae, Corylaceae and Oleaceae recorded during the years 1991–1996 have been analysed.

Pollen counts were carried out using a volumetric trap (VPPS 2000 Lanzoni, Bologna) placed about 25 m above ground level, on the roof of the St. Antonio Hospital in Padua, a city located in north-eastern Italy in the Po Valley.

Samples were collected daily on slides. Sampling method, slide preparation and data interpretation have been performed according to the standard method of the Italian Network for the Aerobiological Monitoring

(Mandrioli, 1990) and were expressed as pollen grains per cubic meter (p/m^3).

The analysis of the pollen concentration trend from 1991 to 1996 has been performed using the annual sum (AS) of the daily values.

The “effective” pollen season (EPS), defined as the period in which the daily pollen count exceeded 30 p/m^3 for Graminaceae and Urticaceae and 20 p/m^3 for the other families (Viander et al., 1978; Saia et al., 1983; Tariq et al., 1996; D’Amato et al., 1998), was calculated to better compare the year trends of the pollen concentration.

3. Results

In the years examined, AS of Graminaceae showed relatively constant values, even in 1993 when an exceptional pollination occurred and in 1996 a marked decrease was recorded. AS of Urticaceae showed a constant increase of pollen concentration until 1995 and a slight drop in 1996. Compositae pollination pattern in 1991 and 1992 were similar, in 1993 a pollen peak was reached; AS in 1994 and mainly in 1995 and 1996 was significantly lower. Betulaceae

Table 1. Annual sum of the daily pollen values

	1991	1992	1993	1994	1995	1996
Graminaceae	2561	2293	4467	2923	2770	920
Urticaceae	6362	6248	7577	8432	9870	5145
Compositae	699	670	1027	409	215	203
Betulaceae	997	280	399	689	227	223
Corylaceae	1816	696	752	3427	471	379
Oleaceae	722	1302	861	1593	494	221

Table 2. Effective pollen season (EPS)

	Graminaceae	Urticaceae	Compositae	Betulaceae	Corylaceae	Oleaceae
1991	20 Apr–27 Jun	29 Apr–22 Sep	13 Aug–4 Sep	19 Feb–2 Apr	19 Feb–24 May	16 Apr–17 Jun
1992	2 May–18 May	2 May–22 Sep	13 Aug–17 Aug	17 February	15 Feb–15 Apr	19 Apr–4 Jun
1993	29 Apr–12 May	29 Apr–20 Sep	8 Aug–22 Aug	13 Feb–21 Feb	12 Feb–20 Apr	18 Apr–28 May
1994	21 Apr–16 Jun	22 Apr–30 Sep	16 Aug–22 Aug	7 Feb–26 Mar	28 Jan–1 May	30 Mar–6 Jun
1995	28 Apr–28 Jun	28 Apr–18 Sep	20 August	4 April	7 Feb–24 Apr	19 Apr–8 May
1996	2 May–14 Jun	28 Apr–24 Sep	EPS < 20p/m ³	2 March	21 Apr–23 Apr	22 Apr–23 Apr

and Corylaceae showed a triennial trend, with highest values during 1991 and 1994. AS of Oleaceae was irregular during the different years. Table 1 shows AS for the considered plant families.

The start of EPS was relatively constant for Urticaceae and Graminaceae, while tree pollen and Compositae showed significant variations. On the other hand, the end of EPS was constant only for Urticaceae and extremely variable for the other pollen types. EPS of Compositae was short from 1991 to 1995 and in 1996 the EPS was never achieved. Table 2 summarizes the EPS of different species in the years considered.

4. Conclusions

We observed a significant variability of the annual sum and effective pollen season for all the considered allergenic pollen families, except for Urticaceae whose AS and EPS were relatively constant. On the basis of the pollen monitoring in years 1991–1996,

we are unable to work out a previsional model. We concluded that a longer monitoring period correlated with meteorological data may enable us to get more reliable information.

References

- Corsico R., D'Amato G. and Frenguelli G.: 1999, *Le piante come fonte di allergia*. GPA: Milano.
- D'Amato G., Spiekma F.Th.M., Liccardi G., Jager S., Russo M., Kontou-Fili K., Nikkels H., Wurthrich B. and Bonini S.: 1998, Pollen-related allergy in Europe. *Allergy* **53**, 567–578.
- Mandrioli P.: 1990, The Italian aeroallergen network: report 1990. *Aerobiologia* **6**(2/1), 2–59.
- Saia B., Marcer G. and Crescioli S.: 1983, Monitoraggio dei pollini e delle spore fungine aerodiffuse nel 1981 e 1982 a Padova. In: *Aerobiologia in Allergologia clinica*, vol. 5. Lombardo: Roma, pp. 9–13.
- Tariq S.M. and Emberlin J. (eds.): 1996, *Clinical Applications of Aerobiology*. UCB Institute of Allergy.
- Viander M. and Koivikko A.: 1978, The seasonal symptoms of hyposensitized and untreated hay fever patients in relation to birch pollen counts: correlation with nasal sensitivity, Prick tests and RAST. *Clinical Allergy* **8**, 387–396.