

Aerobiological and clinical aspects of *Parietaria officinalis* in the area of Thessaloniki, Greece

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SUMMARY. We collected the daily pollen samples during a 3-year period (Febr '87 - Dec '89), using a Burkard volumetric trap, located on a high level area in the center of the city. *Parietaria officinalis* pollen was not differentiated under microscope from the other *Urticaceae* but through phenological criteria. The patients included in the detection of the sensitivity to *P. officinalis* pollen came from the Out-patient Clinic of Bronchial Asthma of the General Hospital «G. Papanikolaou». They had a seasonal pollinosis and they were submitted to Pricktest using a battery of 22 groups and a *P. officinalis* pollen extract. The *Urticaceae* pollen appears first in the atmosphere of Thessaloniki in the end of March, shows a peak in the beginning of May and continues to be present till the end of August. We detected *P. officinalis* pollen sensitivity combined with other allergens in 24.1% of the patients and in 1.4% a monosensitivity to *P. officinalis*.

Key words: Greece, *officinalis*, *Parietaria*, *Poaceae*, pollen, pollinosis, skin-pricktest, *Urticaceae*

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INTRODUCTION

Pollen belonging to *Parietaria* species constitute a very important problem from the allergological point of view for patients and doctors in the Mediterranean Area (Bousquet *et al.*,

1984; Bousquet *et al.*, 1986; D'Amato and Lobefalo, 1989).

This paper provides data concerning the fluctuation of airborne pollen in northern Greece as part of a surveying program in this region (Gioulekas *et al.*, 1991).

MATERIALS AND METHODS

Study area

The observation area and the aeropalynological methods were identical to those described in an earlier report on *Olea europea* pollen records (Gioulekas *et al.*, 1991).

For the detection of patients' sensitivity to *Parietaria officinalis*, a total of 593 patients, admitted to the Out-Patient department for Asthma during the last 18 months (from 1/1/1989 to 30/6/1990) was studied. They filled in a special questionnaire of 200 questions, through which clinical diagnosis of bronchial asthma and/or rhinitis was performed. They were then submitted to skin prick test (SPT) using a panel of 22 common allergens including *P. officinalis* pollen solutions, coming from Bencard Company (England) and Allergopharma (Germany). SPT reactions were read at 15 min and compared to the negative control. A SPT was considered positive when wheal diameter was 3 mm and erythema 10 mm larger than those of the negative control.

RESULTS

Pollen record

The airborne pollen concentration in the atmosphere of Thessaloniki showed annual fluctuations in the 3 years studied. The total pollen count for the year 1987 was 9931, the respective pollen count for the year 1988, 7425, and for the year 1989, 7900

Pollen of Urticaceae attain a percentage of 8.9% of the total pollen count recorded during the three years. Urticaceae pollen accounted for the third important pollen type after Cupressaceae (31.8%) and *Quercus* (24.7%) (Tab. I). The pollination season of Urticaceae starts in the beginning of March and continues till the September (Fig. 1).

The start of grass pollen season is in the beginning of April, reaches a peak level from mid May till the first week of June, while low numbers were detected till the beginning of July (Fig. 2). Poaceae (Gramineae) represent the fifth important concentration in the atmosphere of our city with a percentage of 5.2% of the total pollen count, after Pinaceae with 7.4% (Tab. I).

Detection of patients sensitivity

Among the 593 patients undergoing SPT with pollen extracts and other allergens, 432 presented at least one positive reaction to pollens. Out of these pollen allergic patients, 181 patients (41.9%) showed a sensitivity to grass pollens of whom 15 (3.5%) had a monosensitivity (Tab. II). 104 patients (24.1%) were sensitive to *P. officinalis* and 6 of them (1.4%) showed a monosensitization.

DISCUSSION

We have registered the airborne pollen count in the atmosphere of Thessaloniki for 3 successive years and found that our city, situated in the Mediterranean area, does not differ much, as to typical vegetation and production of allergenic pollen types, from other Mediterranean countries. The allergenic pollens registered were quite similar to those of other countries, but they also presented certain differences due to variations of local vegetation.

Tab. I and Fig. 1 and 2 show the concentrations of Urticaceae pollen grains, which are the subject of this paper, but Poaceae pollen counts are also reported for comparison. Particularly Poaceae, which are widespread in Europe, can be used as a good basis of reference of both the registration and dispersal of pollen in the atmosphere of our city and the sensitization of the allergic patients (Busquet *et al.*, 1984).

Table 1. Total pollen count for the years 1987, 1988, 1989. The 37 most important plants in order of number of pollen with their percentages, over the 3 year observation.

	1987	1988	1989	Average	%
Cupressaceae	6465	796	874	2712	31.8
<i>Quercus</i>	1532	2714	2072	2106	24.7
Urticaceae	219	382	1665	755	8.9
Pinaceae	414	669	805	629	7.4
Poaceae	364	455	501	440	5.2
Oleaceae	251	464	462	392	4.6
<i>Corylus</i>	103	364	301	256	3.0
<i>Platanus</i>	46	328	321	232	2.7
<i>Populus</i>	244	209	180	211	2.5
Chenopodiaceae	78	168	150	132	1.6
<i>Carpinus</i>	10	223	19	84	1.0
<i>Fagus</i>	11	212	9	77	0.9
Moraceae	2	49	180	77	0.9
<i>Salix</i>	19	86	31	45	0.5
Compositae	19	52	17	29	0.4
a. <i>Artemisia</i>	—	—	20	20	0.2
b. <i>Ambrosia</i>	—	—	98	98	1.1
<i>Humulus</i>	0	97	15	37	0.4
Rosaceae	—	—	29	29	0.3
<i>Alnus</i>	53	18	8	26	0.3
<i>Plantago</i>	19	18	37	25	0.3
<i>Ulmus</i>	25	16	32	24	0.3
<i>Rumex</i>	—	—	23	23	0.3
Juncaceae	5	29	7	14	0.2
<i>Ilex</i>	2	36	3	14	0.2
<i>Betula</i>	17	9	14	13	0.1
Cyperaceae	6	11	8	8	0.1
Umbelliferae	—	—	9	9	0.1
Ericaceae	19	1	2	7	0.1
<i>Acacia</i>	1	8	2	4	<0.1
<i>Juglans</i>	—	—	4	4	<0.1
<i>Castanea</i>	4	5	0	3	<0.1
Aceraceae	3	2	0	2	<0.1
<i>Tilia</i>	—	—	1	1	<0.1
<i>Aesculus</i>	—	—	1	1	<0.1
Liliaceae	0	3	0	1	<0.1
Onagraceae	0	2	0	1	<0.1
Total	9931	7426	7900	8527	

— This pollen type were not registered during the year considered.

Table II. Absolute and percent frequency of SPT in 328 pollen allergic patients with rhinitis and/or asthma consecutively examined from 1/1/89 to 30/6/90.

	Positivity	Monosensitivity
Gramineae	181 (41.9%)	15 (3.5%)
<i>Parietaria off.</i>	104 (24.1%)	6 (1.4%)

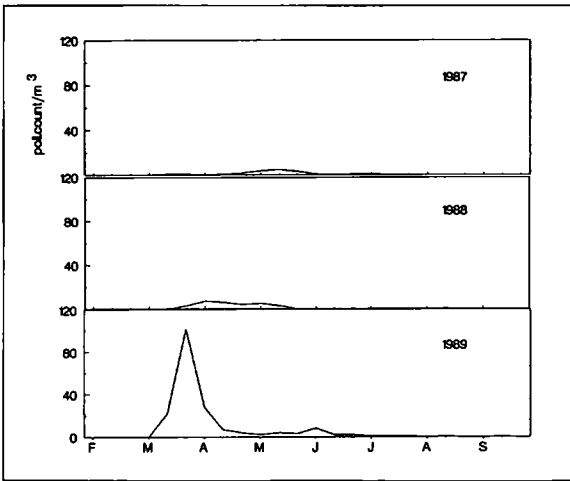


Figure 1. Seasonal (February - September) mean concentration of Urticaceae airborne pollen over the years 1987-1989. The data refers to 10-days running means.

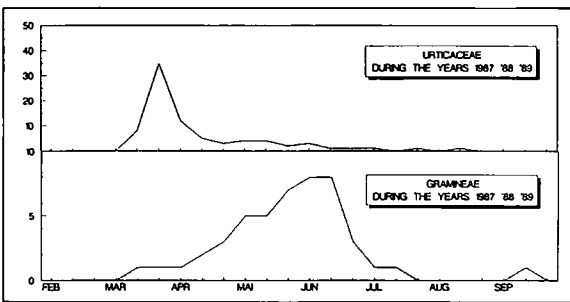


Figure 2. Comparative graphic presentation expressing the 10-day running means values of Urticaceae and Gramineae during the years 1987-1989.

The Urticaceae pollen constituted the third important number of pollen at a percentage of 8.9% of the total pollen sum. This finding is also compatible with other studies on the Mediter-

ranean countries leading us to consider it as characteristic of the area. It should be reported that in this plant family there are two main species *Parietaria* sp. and *Urtica* sp. The conclusions on the degree of clinical importance of the different Urticaceae are drawn from clinical observations. It is well established that *Parietaria* pollen is the most allergenic (Bousquet *et al.*, 1986), and that the other species of Urticaceae are very rarely responsible for the occurrence of clinical symptoms, as there must be a lack of necessary cross allergenicity (Bousquet *et al.*, 1986).

According to the results of our study the percentage of patients with seasonal pollinosis sensitized to *P. officinalis* amounts to 22.7% and, among them, 1.3% show a monosensitivity to *P. officinalis*.

The Poaceae pollen accounted for the fifth important number of pollens registered at a percentage of 5.2% on the total 3 years pollen sum. The percentage of sensitization to grass pollen in patients with respiratory allergy comes up to 41.9% and 3.5% among them are sensitive only to grass pollen. These prevalence are higher than those for *P. officinalis*.

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