

Allergy Induced by *Parietaria officinalis* Pollen in Southern Croatia

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Pollen of *Parietaria officinalis* causes season-associated respiratory symptoms. In Southern Croatia (Yugoslavia) we found 65 % patients with rhinitis and/or asthma to be allergic to this pollen. They showed positive cutaneous reactions and had specific IgE antibodies to the respective isolated allergen. The finding represents the first report on *Parietaria officinalis*-induced allergy on the east Adriatic coast.

Key words: Adriatic coast; allergy; *Parietaria officinalis*

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Numerous species of *Parietaria* (*P. officinalis*, *P. judaica*, *P. ramiflora*, *P. lusitanica*, *P. cretica*) of the *Urticaceae* family are widespread throughout Croatia (Yugoslavia) (3, 7). Their pollens are in the air mainly from April to November. *P. officinalis* is widespread in Southern Croatia (Dalmatia) (3).

Inasmuch as a relatively large fraction of our patients with pollinosis had negative reactions in tests to standard grass allergens it appeared that a major allergen is absent from our standard testing procedure. Therefore, we isolated the allergen of *P. officinalis* and used it in skin sensitivity tests hoping it might fill the gap in our battery of allergens.

PATIENTS AND METHODS

Patients

A population of 80 patients with hay fever pollinosis was studied. They were 18-50 years old and included 45 males (mean age 30) and 35 females (mean age 28). Thirty lived in the city of Split (Croatia) and 50 in city suburbs. All subjects whose history included *P. officinalis* hypersensitivity claimed that *P. officinalis* grew on the walls of their houses and on partition walls.

Every harvesting or extraction of *P. officinalis* provoked skin (30 %), conjunctival (50 %) and nasal symptoms, and wheezing with cough producing whitish sputum (30 %). Most of the symptoms appeared from April to the middle of the autumn (when none of the grasses are flowering). The symptoms caused by *P. officinalis* could not be unequivocally differentiated from those caused by other grasses.

The control group comprised 40 non-atopic healthy persons who were skin tested in the same way as the allergic patients. None of these controls had any manifestation or history of atopic disease, either personally or in the family. They were tested for skin reaction to *P. officinalis* allergen and to mixed grass pollen allergen. We also examined titer of *P. officinalis*-specific IgE antibodies in both groups.

Allergens

Aqueous antigen extracts of mixed grass pollen allergen were commercial products (Institute of Immunology, Zagreb), containing pollens of six grasses (*Poa pratensis*, *Phleum pratense*, *Secale cereale*, *Alopecurus pratensis*, *Agrostis alba*, *Dactylis glomerata*). 100 g of *P. officinalis* pollen grains were defatted in diethyl ether for 30 min at room temperature, filtered, air-dried and ex-

tracted with Coca's fluid for 60 min at room temperature. The extract was then filtered and centrifuged (2500 g, 30 min at 4°C), the pellet was discarded and the supernatant concentrated using polyethyleneglycol. In the next step supernatant was dialysed at 4°C in Visking 18/30 tubing against four changes of 0.01 M ammonium bicarbonate, and lyophilised. The protein content of the dialysate was measured by absorbance at 280 nm and also by weight of the freeze-dried preparation. 100 g of pollen grains yielded 2 g, i.e. about 2% of the total amount, of crude aqueous freeze-dried extract.

IgE RAST

Specific IgE antibodies for *P. officinalis* were measured using RAST assay (radio-allergo-sorbent-test, Pharmacia, Uppsala, Sweden). Serum samples were always analysed in duplicate. Positive findings were categorized as class 1 (weakly sensitized); class 2 (definitely sensitized); class 3 and class 4 (highly sensitized) (6).

Intracutaneous skin test

Intracutaneous skin tests were made with the crude mixed grass pollen allergen and *P. offi-*

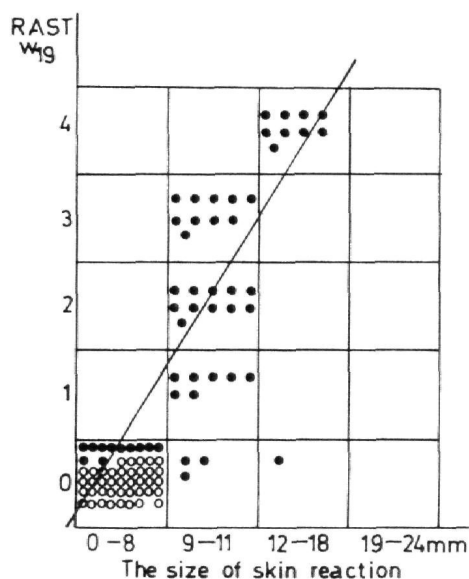


Fig. 1. Correlation between intracutaneous test reaction and RAST-detected specific IgE antibodies with *P. officinalis* pollen in subjects that had (●) or had not (○) been in contact with *P. officinalis*.

Table 1

Skin tests with mixed grass pollen allergen¹ and *Parietaria officinalis* allergen² in the 80 patients with pollinosis hay fever

Patient tested with allergen	Skin tests (range of diameter, mm)	Positive subjects	
		n	%
Mixed grass pollen	9-30	25	35
	5-8	3	
<i>P. officinalis</i>	9-18	31	52.5
	5-8	11	
Mixed grass pollen and <i>P. officinalis</i>	9-11 ³	10	12.5

¹A commercial product containing pollens of six grasses: *Poa pratensis*, *Phleum pratense*, *Secale cereale*, *Alopecurus pratensis*, *Agrostis alba* and *Dactylis glomerata*.

²See Patients and Methods.

³Range of diameter of skin reaction with both allergens.

cinalis pollen extract at a concentration of 0.02%. Histamine hydrochloride (0.1 mg/ml) was used as a positive reference and 0.9% NaCl with 0.5% phenol as a negative control. Tests were performed in a double-blind manner and were considered positive when the largest diameter of the urticarial wheal reactions were 6 mm or larger, and the saline phenol control completely negative (2).

RESULTS AND DISCUSSION

Table 1. shows the results of skin testing with mixed grass pollen allergen and *P. officinalis* pollen. In the group of allergic subjects, reactions to *P. officinalis* pollen were positive in 52.5% patients, to mixed grass pollen allergen in 35% patients, and to both allergens in 12.5% patients. This means that in our population of hay fever pollinosis patients 65% were

allergic to *P. officinalis* pollen. Although the population studied includes highly selected pollinosis patients and does not represent rhinitis/asthma patients in general, it identifies the *P. officinalis* pollinosis as a significant cause of the hay fever in Southern Croatia. The high incidence of reactivity to *P. officinalis* pollen confirms Serafini's suggestion (10) of the etiological potential of *P. officinalis* species, and documents the hitherto unknown involvement of *P. officinalis* pollen in the etiology of allergy along the east Adriatic coast.

Fig. 1. shows the relation of the skin-test reaction and specific IgE antibodies to *P. officinalis* pollen in subjects who had or had not been in direct contact with *P. officinalis*. In allergic patients strong skin reactions significantly correlated with higher antibody titers ($r = 0.70$, $P < 0.001$). In the control (non-allergic) group, both skin reactions and RAST for specific IgE antibodies were negative regardless of whether *P. officinalis* (Fig. 1) or mixed grass pollen allergen was used (not shown).

P. officinalis pollen is responsible for approximately 8% of pollinosis hay fever in northern Italy (in Liguria it rises to about 70%), 32% in central Italy, and 60% in southern Italy (10, 11). Italian authors isolated the relevant allergens from *P. officinalis* pollen (5), recently detected the specific IgE in the sera of allergic patients (8), and purified a hapten and a low molecular weight allergic peptide from the *Parietaria* pollen (4). However, *P. officinalis* pollinosis has been rarely observed in other Mediterranean countries; only sparse reports exist for the south of France and the Côte d'Azur (1), Spain (12), and south of Constanza on the Black Sea (9). Our study definitely identifies *P. officinalis* (*crkvina* in the Croatian language) as a potential source of allergy on the east coast of the Adriatic.

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