

Immediate contact allergy to birch leaves and sap

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Fresh sap and crushed leaf of birch (*Betula verrucosa*) were tested with the scratch chamber method in 117 atopic persons, 74 of whom were allergic and 43 nonallergic to birch pollen, and in 33 control patients.

Immediate positive reactions to birch sap were seen in 39 % and to leaf in 28 % of the patients allergic to birch pollen, in one of the birch pollen-negative patients, but in none of the control patients. Birch leaves may cause contact urticaria in the Finnish sauna, where bath whisks made of birch sprigs are traditionally used.

Key words: Atopy – birch leaf – birch pollen allergy – birch sap – contact urticaria – immediate hypersensitivity.

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In the Finnish sauna, the use of a bath whisk made of birch sprigs may produce itching, tingling, redness or even contact urticarial lesions. The symptoms usually appear within 5–15 min and gradually fade in 1 or 2 h. We saw two persons with this "Finnish sauna disease" and with birch pollen allergy.

Material and Methods

The test subjects were 117 atopics with allergic rhinitis and/or bronchial asthma, 74 of whom were allergic and 43 nonallergic to birch pollen. Thirty-three other patients with chronic rhinitis but without any positive reactions to 20 common inhalant allergens formed the control series. In addition to the routine test panel, the patients were tested with fresh sap and crushed leaf of birch (*Betula verrucosa*) using the scratch chamber method described earlier (Hannuksela & Lahti 1977). Results were read after 15 min. Edema reactions of at least half of

the area produced by histamine were regarded as positive, while minor reactions were considered negative.

The sap was taken just before testing from a chunk of birch. New chunks and leaves were obtained every morning because the antigenicity of the sap diminished greatly in a few days when the birch chunks were kept at room temperature or refrigerated. Moreover, the skin reactions tended to be stronger at the beginning of the summer than in August.

Results

None of the patients in this study noticed symptoms from birch sprig whisks during sauna bathing. None of the patients was a forester or worked with fresh birch.

Positive skin reactions to birch sap were seen in 29 (39 %) and to birch leaf in eight (11 %) of the 74 birch pollen-positive patients, and to birch sap in one of the 43 birch pollen-negative patients. None of the

Table 1. Positive immediate skin test reactions to common inhalant allergens in 30 birch sap-positive and in 87 birch sap-negative atopic patients

	Birch sap- positive No. (%)	Birch sap- negative No. (%)
House dust	14 (47)	32 (37)
House dust mite	1 (3)	5 (6)
Feather mix	4 (13)	8 (9)
Sheep wool	1 (3)	0
Horse dander	14 (47)	21 (24)
Cow dander	7 (23)	16 (18)
Dog dander	16 (53)	25 (29)
Cat dander	15 (50)	36 (41)
Birch pollen	29 (97)	45 (52)
Alder pollen	25 (83)	24 (39)
Willow pollen	1 (3)	0
Dandelion pollen	1 (3)	1 (1)
Chrysanthemum pollen	2 (7)	1 (1)
Mugwort pollen	3 (10)	3 (4)
Timothy pollen	5 (17)	16 (18)
Alopecurus pollen	7 (23)	12 (14)
Kentucky blue pollen	8 (27)	16 (18)
Meadow fescue pollen	9 (30)	14 (16)
Four-mold mix	4 (13)	6 (7)
<i>Candida albicans</i>	2 (7)	17 (20)
No. of patients tested	30	87

33 control patients had positive skin reactions to either birch sap or leaf. All eight patients reacting to birch leaf reacted to sap. The reactivity to birch leaf and sap did not correlate with inhalant allergens other than birch and alder pollens (Table 1).

Discussion

Allergy to birch pollen seems to be a clue to other immediate allergies. Allergy to apple, carrot, swede, potato, celery and some other fruits and vegetables (Hannuksela & Lahti 1977) as well as to many spices (Niinimäki & Hannuksela 1980) is connected with birch pollen allergy. This close connection has been shown to be true cross-hypersensitivity between birch pollen and apple (Björkstén et al. 1980, Lahti et al. 1980).

This finding favors the suggestion that all immediate allergies connected with birch pollen allergy are nothing but an expression of cross allergy.

The allergens in fruits and vegetables are easily destroyed during storing, cooking and even by deep-freezing (Hannuksela & Lahti 1977, Lahti & Hannuksela 1978). This was also true of birch sap and leaf. Using polyvinyl pyrrolidone, Björkstén and coworkers (1980) hindered the degradation of the apple allergens. The phenols present in fresh plant materials probably cause the rapid diminution of allergenicity during storage.

The clinical significance of the present findings remains to be established. Although none of the patients tested during this study had noticed symptoms from birch whisks used in the Finnish sauna, our preliminary findings suggest the importance of this type of allergy in at least some persons sensitive to birch pollen.

References

- Björkstén, F., Halmepuro, L., Hannuksela, M. & Lahti, A. (1980) Extraction and properties of apple allergens. *Allergy*. Submitted for publication.
- Hannuksela, M. & Lahti, A. (1977) Immediate reactions to fruits and vegetables. *Contact Dermatitis* 3, 79-84.
- Lahti, A. & Hannuksela, M. (1978) Hypersensitivity to apple and carrot can be reliably detected with fresh material. *Allergy* 33, 143-146.
- Lahti, A., Björkstén, F. & Hannuksela, M. (1980) Allergy to birch pollen and apple, and cross-reactivity of the allergens studied with the RAST. *Allergy*. In press.
- Niinimäki, A. & Hannuksela, M. (1980) Immediate skin test reactions to spices. *Allergy*. Submitted for publication.

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