

Serum samples from the previous study (5) on 127 woodwork teachers and 111 controls were investigated for the presence of IgE antibodies to jelutong and NRL. In seven sera, IgE antibodies to NRL were found. Three of these sera, from one woodwork teacher and two controls, also contained IgE to jelutong sap. The jelutong-positive woodwork teacher reported having work-related symptoms from the eyes and respiratory tract for more than 10 years. He had previously used jelutong daily at work, but he had stopped this after exacerbation of respiratory symptoms. The two jelutong RAST-positive controls had no occupational exposure to jelutong, but both were exposed to sawdust during their leisure time without reported symptoms.

Sensitization to NRL was found in seven subjects, two woodwork teachers and five controls. This corresponds to a total prevalence of 3.4%, a percentage somewhat below the prevalence found in occupationally NRL-exposed populations (1). The only symptoms from NRL in this group were reported by a control person with hand dermatitis after wearing rubber gloves and swollen lips after changing bicycle inner tubes.

SDS-PAGE followed by immunoblotting was performed on the saps of jelutong and NRL with NRL- and jelutong-positive sera. A larger number of allergenic components were

identified in the NRL than in the jelutong sap extracts. In both extracts, bands were found in the molecular range around 14, 30, 36, and 45 kDa (Fig. 1), which is in the same molecular range as important NRL allergens (1).

The cross-allergenicity between jelutong and NRL was studied with a RAST inhibition assay, in which allergens block specific IgE antibodies, resulting in a reduction of the remaining free IgE, as measured by latex ImmunoCAP, k82, in the Pharmacia CAP System (6). A concentration of 10–70 µg/ml of the jelutong and NRL extracts gave 50% inhibition of the two systems. The inhibition curves obtained were similar for the two sap extracts. Jelutong allergens were also demonstrated in jelutong sawdust extracts, and more than 95% inhibition was achieved with undiluted extract.

In this study, we have demonstrated allergenic cross-reactivity between NRL and jelutong and shown the existence of jelutong allergens in jelutong sawdust. We have also previously found minute amounts of NRL allergens in sawdust from *Hevea brasiliensis* (unpublished data), a notable fact, since woods from rubber trees are commercially used.

Airborne exposure to sawdust is one possible exposure route for these allergens; another exposure route for jelutong is through chewing gum since natural rubbers and resins are still used as bases in chewing gum, even if

synthetic bases have to some extent replaced natural saps. The exposure conditions that represent the greatest hazard remain to be elucidated. In the light of the highly differing clinical patterns seen in the NRL-allergic individuals, we find further studies on cross-reactivity between rubber trees and natural gum bases essential.

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Accepted for publication 16 August 1999
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ISSN 0105-4538

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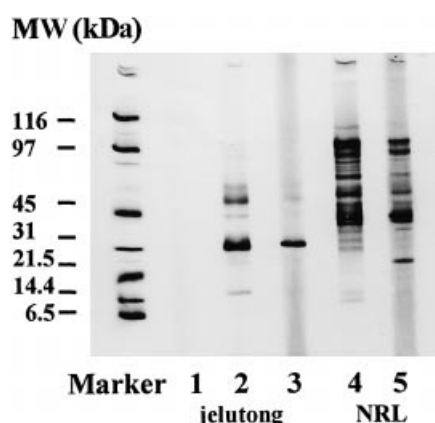


Figure 1. IgE-binding components in jelutong sap and NRL. Lane 1) Jelutong sap on nitrocellulose (NC) membranes incubated with negative control serum; lanes 2 and 3) jelutong sap on NC membranes incubated with two different sera positive to both jelutong and NRL; lanes 4 and 5) NRL on NC membranes incubated with two different NRL-positive sera. MW: Molecular weight.

Sensitization to aeroallergens in Ankara, Turkey

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Key words: allergic rhinitis; atopy; bronchial asthma; skin prick test.

• RECENT data on the prevalence rates of respiratory, nasal, and skin symptoms in

European countries reveal rates of 18%, 16%, and 4%, respectively (1). In a prevalence study recently performed on 46 813 children in Turkey, the prevalence rate for asthma was found to be 14.7% (2). Rates for perennial and seasonal rhinitis also seem high; prevalence rates of 1.6% and 6.4% have been found for perennial and seasonal rhinitis, respectively, in tests performed on 4331 university students in Ankara (3).

It is also known that aeroallergens play a major role in the pathogenesis of asthma and allergic rhinitis. However, there has been no study on sensitization and respiratory disease in Turkish children. Therefore, we tried to compare the clinical and allergic features of children with allergic rhinitis and/or bronchial asthma living in or nearby Ankara for at least 2 years. Our study group was selected from all pediatric patients referred for respiratory symptoms to our outpatient department at Gazi University Hospital

Pediatric Allergy and Asthma Department between January 1995 and November 1998. Among 2180 patients referred, 867 (aged 6–16 years, 409 girls) who were found to have respiratory disease and positive skin prick tests were included in this study. The skin prick test used in the study included 37 common standardized aeroallergens (Stallergènes, France, and Hall, The Netherlands) (Table 1). A positive reaction was defined as a mean diameter of >3 mm greater than the negative control, in the presence of a positive histamine reaction after 15 min. Atopy was defined as a positive response to at least one allergen used in the routine panel. For comparison between the groups, either the chi-square test or the unpaired *t*-test was used. If the size of the table cell was less than 5, Fisher's two-tailed exact test was used. A *P* value of <0.05 was considered significant.

In our study, the mean age of onset for the disease was found to be 7.7 ± 4.4 years. There were 458 (52.8%) boys and 409 (47.2%) girls ($P > 0.05$). Among our patients, 19% had monoallergy and 81% had allergy to two or

more different allergens. We think that this high frequency of positivity to different antigens may be related to the great variety of plants in our region. Although sensitization to house-dust mites is strongly associated with asthma, exclusive sensitization to pollens is primarily associated with rhinitis. In an adult series performed in Ankara, sensitivity to house-dust-mite allergen was found at a rate of 30–50% in patients with asthma (5, 6). In this study, 34.3% of all children were sensitive to *Dermatophagoides pteronyssinus* and 53% of them had bronchial asthma. In our study, allergy to cat dander was 8% and to dog dander 6.7%. Among all allergic diseases, pet sensitivity was the least common, unlike the situation in western countries, since keeping pets is rare in Turkey. Cockroach sensitivity was found at a rate of 4.3% among our patients. However, Mungan et al. have reported a higher rate (25.7%) in a study performed on adult patients with bronchial asthma in Turkey (6).

For children in Ankara with allergic respiratory diseases, the most common allergens are pollens. Cocksfoot, ryegrass,

Table 1. Demographic and clinical characteristics of patients with respiratory diseases compared to allergic factors

	All patients		Bronchial asthma		Seasonal rhinitis		Perennial rhinitis		Bronchial asthma plus allergic rhinitis	
	n=867	%	n=394	%	n=254	%	n=106	%	n=113	%
Girls	409	47.2	181	45.9	118	46.5	54	50.9	56	49.6
Age (years) mean $\pm$ SD	10.9 $\pm$ 3.5		10.2 $\pm$ 3.5		10.5 $\pm$ 3.5		11.2 $\pm$ 3.1*		11.1 $\pm$ 3	
Atopic dermatitis	262	30.2	130	32.9	80	31.4	28	26.4	24	21.2
Passive smokers	448	51.7	232	59	109	42.9	45	42	62	54.8
Breast-feeding	220	25.3	98	24.8	59	23.2	30	28.3	33	29.2
Family history	280	32.2	128	32.4	84	33	32	30.1	36	31.8
Allergen										
monosensitization	165	19								
House-dust mite	53	32.1	28	52.8*	7	13.4	10	18.8	8	15
Mold	7	4.3	2		0		3		2	
Cockroach	8	4.8	3		0		3		2	
Pet animals	2	1.2	1		0		0		1	
Grass	88	53.3	18	20.5	43	48.8*	15	17	12	13.7
Weeds	7	4.3	3		0		1		3	
Trees	0		0		0		0		0	
Cereals	0		0		0		0		0	

*Significant differences from other groups.

meadow fescue, timothy, meadow grass, *Penicillium* mix, *Candida*, cereal mix, elm, and plantain were found to be the predominant allergens. Grass pollens appear to be the most important allergen in seasonal rhinitis, whereas weeds were a more common cause of perennial rhinitis than grass pollens.

Our study has included the first skin prick test findings in children with respiratory diseases (asthma and/or rhinitis) in Ankara, Turkey. Atopy is a very important risk factor for respiratory allergic diseases. Therefore, skin tests may be useful to detect children with a risk of developing respiratory allergic diseases.

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Accepted for publication 27 August 1999
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ISSN 0105-4538

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Occupational asthma to perfume

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Key words: challenge test; occupational asthma; perfume.

● PATIENTS with airway diseases often experience asthma-like symptoms upon contact with perfumes. Up to now, they were

mainly assumed to be due to the irritative effects of perfumes in patients with pre-existing unspecific bronchial hyperreactivity.

A 44-year-old woman worked in a drugstore from 1970 until 1996. Since 1988, she had noticed dyspnea while presenting customers with various perfume brands. In 1996, she experienced a severe asthma attack. Because of the respiratory problems, she could no longer work in her profession. Her case history revealed neither previous respiratory disorders nor an atopic disposition. She had smoked 10–15 cigarettes per day for 18 years.

Total serum IgE was 65 kU/l and within the normal range. Skin prick tests with 20 common environmental allergens revealed no type I sensitization. The epicutaneous tests with the European standard reagents panel indicated a delayed type-IV reaction to a mixture of odorous substances (HAL, Düsseldorf, Germany). The medical examination did not provide evidence for lung disorders. Lung-function tests showed a

moderate and reversible obstructive ventilation pattern (airway resistance R_{aw} =0.52 kPa*s/l; FEV₁%VC 62%; intrathoracic gas volume and residual volume were within normal ranges).

Workplace-related specific challenges with nine different brands of perfumes as well as with one individual perfume resulted in increased nasal airflow resistance and in significant bronchial obstruction (Fig. 1).

Cases of airway irritation by perfumes without clinical symptoms or occupational exposure have been described (1, 2), but the question of whether perfumes alone could cause the development of bronchial asthma has not been answered. There are contradictory opinions about the pathogenetic role of perfumes. Some authors could not find a correlation between bronchial hyperreactivity, as verified by methacholine, and perfume-related asthma (3, 4), while others (5, 6) reported a clear correlation between the methacholine response and the severity of airway obstruction caused by perfumes.

In this otherwise healthy woman, case history and clinical findings suggest obstructive airway disease as a result of occupational exposure to perfumes over a period of 26 years. The long-term exposure to perfumes in the workplace obviously initiated the manifestation of chronic asthma, which persisted even after the patient avoided further contact. The causative role of perfumes was confirmed by specific challenges when she showed immediate-type asthmatic reactions. However, it should be considered that perfumes are a complex mixture of natural and

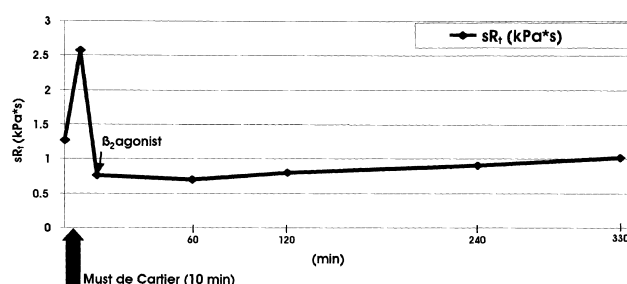


Figure 1. Inhalative challenge with perfume "Must de Cartier".