

that postmenopausal women present a significantly lower risk of developing asthma than premenopausal women of a similar age (4). In the same study, replacement therapy with estrogens increased the risk of asthma in a dose dependent manner. In animal models, sex steroid hormones have been shown to influence the immune system by various actions (5).

In this study, 74 BALB/c mice of three weeks old (in the prepuberty) have been used. They were separated into four categories: Group 1: 11 males, 11 females; Group 2: 10 males, 10 females; Group 3: 10 males, 10 females; Group 4: six males and six females.

The mice in the Group 1 were injected intraperitoneally with 5 mg of progesterone every other day for two weeks. The mice in the Group 2 were injected intraperitoneally with 0.1 ml of estradiol benzoate 0.1 mg + estradiol phenylpropionate 0.4 mg + testosterone isocaproate 4 mg + testosterone propionate 2 mg + testosterone phenylpropionate 4 mg, every other day for two weeks. Injections were repeated with 0.1 ml of estradiol benzoate 0.25 mg + progesterone 1.25 mg to the mice of Group 3 for the same period. Finally the mice of Group 4 were injected with 0.1 ml of serum physiological solution. The mice were dissected two days after the last injections. The cross-sections prepared from the lung tissues were investigated by the light microscopy.

The results were as follows. Group 1. Male mice: In only one of 11 mice there was a mild broncho-constriction with a heavy peribronchial cell infiltration consisted mostly of plasma cells, moderate lymphocytes and lesser mast cells. There were scattered areas of epithelial necrosis in the lumens of bronchioles. The remaining mice did not present any inflammatory changes. Female mice: There were not any inflammatory changes. Group 2. No remarkable histopathological features. Group 3. Male mice: No remarkable histopathological changes. Female mice: There were peribronchial mononuclear cell infiltrations in two of the mice. Group 4: No inflammatory changes.

In animal models, sex steroid hormones have been shown to influence the immune system by various actions: by affecting the structure and function of the thymus; modulating the activity of B and T cells,

natural killer cells and phagocytic cells (6). In human leukocyte studies (7,8) and in animal studies (9) estrogens have been shown to possess some anti-inflammatory properties. Physiological doses of estradiol significantly reduce the inflammatory responses in castrated mice although the percentage of polymorphonuclear cells in peripheral blood does not change (10). In our study, we intended to search whether if we could stimulate any inflammatory response in the bronchial tissues of prepubertal mice by giving them high doses of sex hormones. Our results do not allow making an interpretation about the inflammatory responses due to sex hormones in the studied mice. The inflammatory changes in three mice (one of Group 1 and two of Group 3) may be due to nonspecific environmental conditions. We conclude that we need further controlled investigations in this field.

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## References

- JOHANSSON SGO, HOURIHANE JO'B, BOUSQUET J, BRUIJNZEEL-KOOMEEN C, DREBORG S, HAAHTELA T, KOWALSKI ML, MYGIND N, RING J, VAN CAUWENBERGE P, VAN HAGE-HAMSTEN M, WÜTHRICH B. Position Paper. A revised nomenclature for allergy. An EAACI position statement from the EAACI nomenclature task force. *Allergy* 2001;**56**:813–824.
- BALZANO G, FUSCHILLO S, MELILLO G, BONINI S. Asthma and sex hormones. *Allergy* 2001;**56**:13–20.

- LUYT DK, BURTON PR, SIMPSON H. Epidemiological study of wheeze, doctor diagnosed asthma, and cough in preschool children in Leicestershire. *BMJ* 1993;**306**:1386–1390.
- ANDERSON HR, POTTIER AC, STRACHAN DP. Asthma from birth to age 23: incidence and relation to prior and concurrent atopic disease. *Thorax* 1992;**17**:12.
- SCHAFER J, HIGGINS MW. Median age onset of asthma and allergic rhinitis in Tecumseh, Michigan. *J Allergy Clin Immunol* 1976;**57**:312–351.
- TROISI RJ, SPEIZER FE, WILLET MC, TRICHOPOULOS D, ROSNER B. Menopause, post-menopausal estrogen preparations and the risk of adult-onset asthma. *Am J Respir Crit Care Med* 1995;**152**:1183–1188.
- AHMED A, TALAL N. Sex hormones and the immune system. II. Animal data. *Baillieres Clin Rheumatol* 1990;**4**:13–31.
- BODEL P, DILLARD GM, KAPLAN SS, MALAWISTA SE. Anti-inflammatory effects of estradiol on human blood leukocytes. *J Laboratory Clin Med* 1972;**80**:373–384.
- ITO I, HAYASHI T, YAMADA K, KUZUYA M, NAITO M, IGUCHI A. Physiological concentration of estradiol inhibits polymorphonuclear leukocyte chemotaxis via a receptor-mediated system. *Life Sci* 1995;**56**:2247–2253.
- JOSEFSSON E, TARKOWSKI A, CARLSTEN H. Anti-inflammatory properties of estrogen. *Cell Immunol* 1992;**142**:67.

## Allergy to peach

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**Key words:** bronchial provocation test; occupational asthma; peach; Rosaceae; Spain.

• A VARIETY OF high molecular weight allergens of vegetable origin, such as wheatflour or coffee bean, have been reported to cause allergic respiratory symptoms (1,2). As far as we know, occupational asthma due to peach inhalation, confirmed by specific bronchial challenge, has not been described in the medical literature. We report a case of occupational rhinitis and asthma in a factory worker, who handled

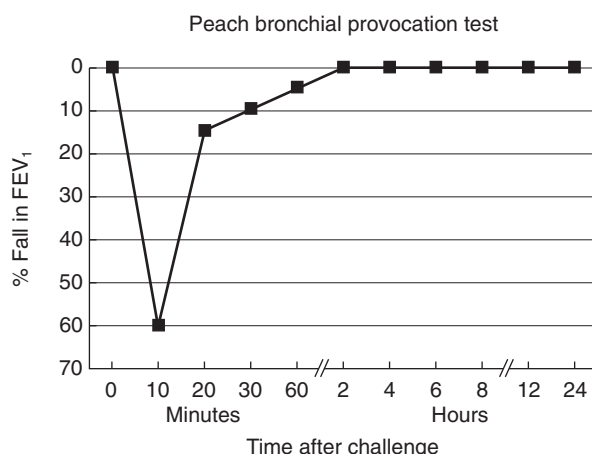


Fig. 1. Specific bronchial challenge induced severe bronchial symptoms with a marked decrease (60%) in respiratory parameters (forced expiratory volume in one second: FEV<sub>1</sub>).

citrus fruits and fruits of the Rosacea family (e.g. peach and apricot).

A 28-year-old woman smoker, with a family history of atopy but no personal history of rhinitis and/or asthma, was studied in our department. Since childhood she had urticarial symptoms after peach ingestion. She had worked in a fruit factory for five years, using latex gloves to handle citrus fruits (mainly oranges) most of the time, and at the end of spring also fruits of the Rosacea family (mainly peaches and apricots). For four years she had cough, wheezing and dyspnea in the workplace, but only while handling peaches or apricots (not other fruits).

Clinical examination, chest radiography and hemogram were normal at the time of the study. Skin prick tests with common aeroallergens, pollens (including birch pollen), storage mites and latex were negative. Prick-by-prick tests with fruits of the Rosacea family were performed and were positive for peach and apricot. Histamine phosphate at 10 ng/ml and normal saline at 0.9% were used as positive and negative skin test controls, respectively (3). Total IgE was 16 kU/l. Specific IgE serum antibodies were found to peach and apricot (13.2 kU/l and 6.32 kU/l, respectively, with levels under 0.35 kU/l for other fruits of the Rosacea family).

#### IgE-mediated asthma to the fruit.

Nonspecific bronchial reactivity was assessed by methacholine challenge (4). Specific bronchial challenge (5) with suspicious allergen (peach) was carried out to confirm the diagnosis of occupational asthma, and was positive, with an immediate response including nasal, ocular and bronchial symptoms, and a marked decrease (60%) in respiratory parameters (FEV<sub>1</sub>) from basal values (Fig. 1).

Peach allergy has been described as a common cause of fresh-fruit allergic reaction in Europe, especially in the Mediterranean area, as well as in the USA (6). Our results imply that peach inhalation can elicit not only IgE-mediated rhinitis but also IgE-mediated asthma (7). Adverse reactions to peach and other Rosaceae fruits can occur after ingestion and by occupational exposure. Patients with adverse reactions to some fruits of the Rosacea family are frequently sensitized to one or more foods from this family (8), as well as pollens. Members of the Rosacea family have allergens with common epitopes, which could explain cross-reactivity between this fruit and certain pollens like birch. (Major allergens of apple, pear and birch pollen have important structural similarities).

Our results suggest that food inhalation not only elicits an IgE-mediated response, but also that allergic diseases can be considered as systemic diseases (more than located ones). The severity of reaction depends on the type

of contact with allergen: urticaria or anaphylaxis if contact is produced by ingestion, and rhinitis or asthma if airborne particles reach the respiratory system of a susceptible person.

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#### References

1. JONES RN, HUGHES JM, LEHRE SB et al. Lung function consequences of exposure and hypersensitivity in workers who process green coffee beans. *Am Rev Resp Dis* 1988;**125**: 199–202.
2. CHANG-YEUNG M, MALO JL. Table of the major inducers of occupational asthma. In: BERSTEIN, IL, CHANG-YEUNG, M, MALO, JL, BERSTEIN, D, editors. *Asthma in the Workplace*. New York: Marcel Dekker 1993, 559–624.
3. DREBORG S. Skin tests used in type I allergy testing. Position paper. *Allergy* 1989;**44**(Suppl. 10).
4. CHATHAM M, BLEECKER ER, NORMAN P, SMITH PC, MASON A. Screening test for airway reactivity. An abbreviated methacholine inhalation method. *Chest* 1982;**83**:15–28.
5. SPECTOR SL. Allergen inhalation challenges. In: SPECTOR, SL, editor. *Provocation Testing in Clinical Practice*. New York: Marcel Dekker 1995, 325–368.
6. CUESTA HERRANZ J, LÁZARO M, DELAS HERAS M et al. Peach allergy pattern: experience in 70 patients. *Allergy* 1998;**53**:78–82.
7. JOHANSSON SGO, HOURIHANE JO'B, BOUSQUET J et al. A revised nomenclature for allergy. An EACCI position statement from the EAACI nomenclature task force. Position paper. *Allergy* 2001;**56**:813–824.
8. RODRIGUEZ J, CRESPO JF, LOPEZ-RUBIO A, DE LA CRUZ-BERTOLO J et al. Clinical cross-reactivity among foods of the Rosaceae family. *J Allergy Clin Immunol* 2000;**106**:183–189.