

LOOKING FOR IMMUNOTOLERANCE: A CASE OF ALLERGY TO BAKER'S YEAST (*SACCHAROMYCES CEREVISIAE*)

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SUMMARY: We describe one case of baker's yeast true allergy in a boy with previously diagnosed mite-allergy and atopic dermatitis. At the age of 6, being atopic dermatitis and rhinitis well controlled by drugs, he began to experience generalized urticaria and asthma after eating pizza and bread, but only fresh from the oven. The diagnostic workup revealed single sensitization to baker's yeast (*Saccharomyces cerevisiae*), and a severe systemic reaction also occurred during the prick-by-prick procedure. After discussing with parents, no special dietary restriction was suggested but the use of autoinjectable adrenaline and on demand salbutamol. A diary of symptoms was recorded by means of a visual-analog scale. During the subsequent 2 years, the severity of symptoms was progressively reduced, and presently urticaria has disappeared. Only cough persists, invariably after eating just-baked and yeast-containing foods. If bread, pizza and cakes are ate more than one hour after preparation, no symptom occur at all.

Baker's yeast is a common component of everyday diet and it usually acts as an allergen only by the inhalatory route. We speculate that the continuous exposure to saccharomyces in foods may have lead to an immunotolerance with a progressive reduction of symptoms, whereas why the allergens is active only in ready-baked foods remains unexplained.

Key-words: *Saccharomyces cerevisiae* - Yeast - Food allergy.

S *accharomyces cerevisiae* (baker's yeast) is largely present in our environment since it is a component of everyday diet (1) and is an essential ingredient for preparing bread, pizza, and cakes. We describe herein the case of a child suffering from moderate systemic reactions, gradually improving, due to the ingestion of pizza or home-baked bread, only when these foods were just taken out of the oven.

A boy came first to our observation when he was four, with symptoms of atopic dermatitis and persistent rhinitis. Allergy to house dust mites was demonstrated based on symptoms characteristics and skin test results. Allergen avoidance measures and nasal steroids allowed achieving a satisfactory control of rhinitis and atopic dermatitis was controlled as well by the application of topical steroids. At the age of six, atopic dermatitis had almost completely remitted and rhinitis symptoms were very mild. Nevertheless, generalized urticaria and bronchospasm occurred on three occasions after eating just-made pizza. Another episode occurred in a bakery after eating some bread fresh from the oven. These episodes were clearly documented by parents and the family paediatrician.

No symptom had at all occurred in the past, when the patient ate bread or cakes at home. Moreover, there were no other possible causes of acute urticaria and/or acute asthma, such as drugs, other foods or exercise.

The clinical examination was negative, and no abnormality of routine biochemical parameters was detectable, but a total IgE of 390 IU/mL. Skin prick tests for common foods (cereals, meats, fish, egg, milk, yeasts, pea, peanut, soybean, onion, tomato, parsley, pear, peach, apple, walnut, almond) were performed with commercial extracts and provided negative results. Skin prick tests for aeroallergens were negative as well, with the exception of house dust mites. These results were confirmed by the CAP test (Pharmacia Uppsala Sweden). Based on the clinical history, a prick-by-prick test was carried out, in a separate session, with wheat and yeast (*Saccharomyces Cervisiae*). A strong positivity (8 X 8 mm) was elicited only with the fresh yeast, but not with wheat flour. About 30 minutes after the prick-by-prick, angioedema and cough appeared. The patient was treated immediately with oral steroids, antihistamines and inhaled B2 agonists, and symptoms completely disappeared in one hour. The diagnosis of allergy to baker's yeast was established. After discussing with

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parents and giving detailed information, no special dietary restriction was recommended, and only the use of auto-injectable adrenaline was suggested. The patient's parents were asked to report monthly his overall symptoms on a visual-analog scale (0-10), in response to the question: "How was food allergy this month?". During the following months the boy had mild systemic reactions (hives and/or cough) only after eating pizza fresh from the oven, and these symptoms progressively became less severe (figure 1). Based on this fact, we repeated the prick-by-prick test with yeast two and three years after the first reaction, and found a persistent positivity (6 X 4 and 4 X 4 mm) without systemic side effects. At present the boy is 8 years old and invariantly experiences only cough after eating just-baked foods containing *Saccharomyces Cerevisiae*. This fact has been repeatedly ascertained with open oral challenges. He receives only inhaled B2 agonists when needed, but the reactions are often so mild that no treatment is required at all.

Allergy to baker's yeast in humans almost invariantly occurs after the inhalation of the allergen (2, 3),

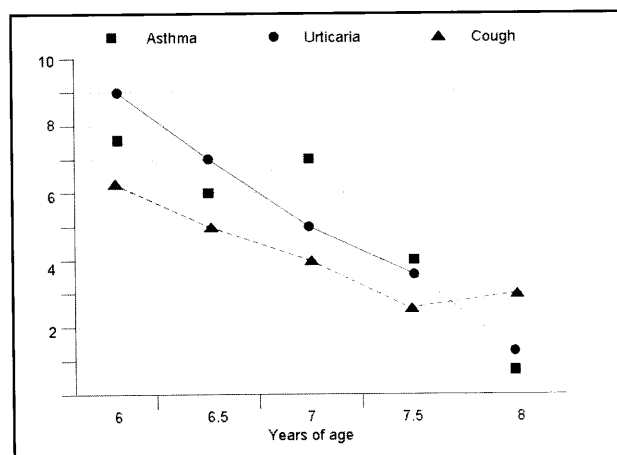


Figure 1: Time-trend of the main symptoms measured by a 0 to 10 visual-analog scale.

© Copirynth: Median Value on 0-10 Scale

although the systemic administration may result in lethal effects in mice (4), and a former report by Kortekangas-Savolainen (5) raised the question of yeasts as possible pathogenic agents in atopic dermatitis. In general, the possibility that yeasts are aetiological agents of food allergy should be taken in consideration in patients who have symptoms after eating warm pizza or bread and cakes. In our case it seems that baker's yeast acted as an offending allergen only in just made baked foods (pizza, bread and cakes), whereas some hours after the preparation, those foods had no effect at all. This would suggest some temperature-related modification of the allergen, but we have no experimental explanation of the fact, and such a phenomenon has never been described before. Moreover, it is conceivable that the continuous exposure to the allergen in everyday diet has lead to a natural tolerance, resulting in progressive subsiding of symptoms. When no severe systemic reaction or anaphylaxis is reported, a prudent free diet could be tried, since a widespread and uncontrolled elimination diet may lead to loss of tolerance (6) and serious or fatal consequence may occur after fortuitous or unintentional ingestion of the offending allergen.

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