

# Tahini, a Little Known Sesame-Containing Food, as an Unexpected Cause of Severe Allergic Reaction

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**Abstract.** We describe the case of a young woman with asthma and confirmed food allergy to sesame who had 2 severe systemic reactions after the inadvertent ingestion of tahini, a paste made with ground sesame seeds that is not generally known by physicians and patients as a sesame-containing food. A double-blind placebo-controlled food challenge confirmed the allergy to tahini in our patient. As new products and recipes are being introduced from around the world on a regular basis, it is essential that at-risk patients are able to obtain information about allergens used as ingredients and as potential contaminants. This should be applied not only to packaged food but also to freshly made foods, such as those served in restaurants.

**Key words:** Allergy. Sesame. Tahini. Masked allergen.

**Resumen.** Detallamos el caso de una mujer joven con asma y alergia al sésamo confirmada que presentó 2 reacciones sistémicas graves tras la ingesta involuntaria de tahini, una pasta de semillas de sésamo raramente reconocida por médicos y pacientes como alimento portador de dicho cereal. Se confirmó la alergia al tahini en la paciente a través de una prueba de doble ciego controlada con placebo. A medida que se van introduciendo nuevas recetas y alimentos de todo el mundo en nuestra dieta diaria, es esencial que aquellos pacientes más vulnerables puedan informarse sobre alérgenos utilizados como ingredientes y contaminantes en potencia. Esta premisa no sólo debería aplicarse en el caso de comida envasada, sino también en alimentos frescos como los servidos en restaurantes.

**Palabras clave:** Alergia. Sésamo. Tahini. Alérgeno enmascarado.

## Introduction

Masked allergens in food can be considered as a sort of constant ambush for patients with food allergies. As a result of globalization, the use of foods containing sesame seeds or oil has spread to developed countries in recent decades. Sesame is most commonly found in Middle Eastern dishes, bakery products, dips, salad dressings, and vegetarian foods. In addition, sesame oil is used extensively in the pharmaceutical and cosmetic industries [1]. This increasing consumption of sesame might be one of the reasons for the growing frequency of reported cases of sesame-induced allergic reactions. In fact, various types of reactions have been reported, including IgE-mediated

food allergy [2] and anaphylaxis [3], occupational reactions [4], and even non-IgE mediated reactions [5]. The issue of masked sesame has been raised in a previous case report [6] and in a recent review [7].

We report the case of a 21-year-old woman with well-known sesame allergy who suffered a severe systemic reaction after the ingestion of a food that was not known to contain sesame.

## Case Description

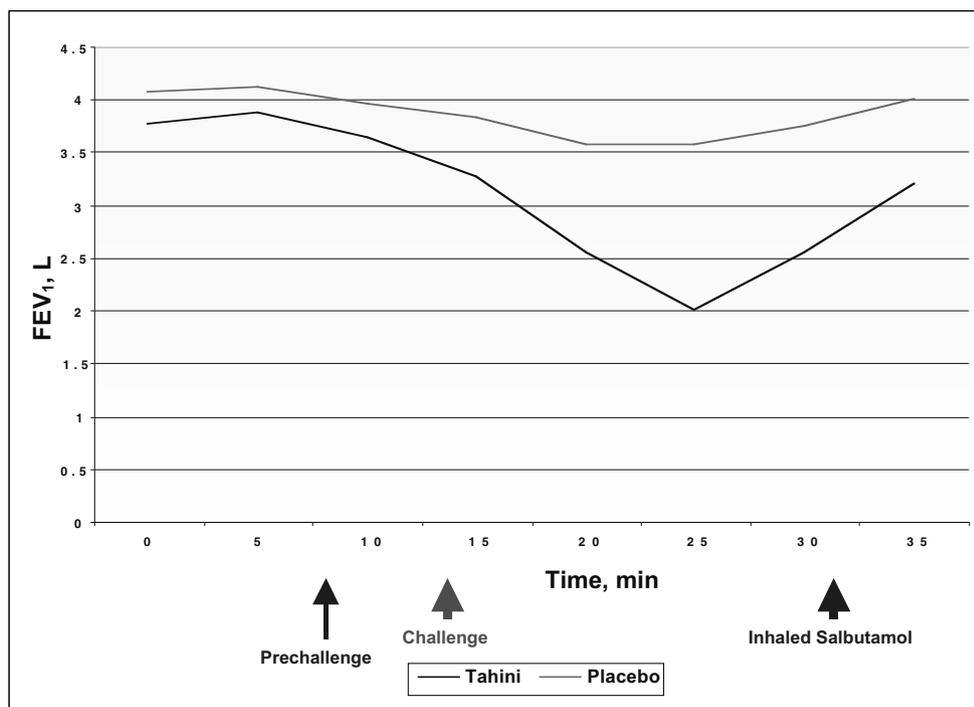
The patient had attended our Pediatric Allergy Unit since childhood for bronchial asthma and had been

diagnosed with sesame allergy 5 years earlier based on clinical symptoms (urticaria, angioedema, and asthma), radioallergosorbent test (CAP-RAST, class 4), and double-blind placebo-controlled food challenge (DBPCFC) with sesame and baked bread (without sesame) as placebo. The DBPCFC was repeated twice in subsequent years, confirming the persistence of food allergy. Therefore, a sesame-free diet was followed. Self-injectable adrenaline was prescribed at the time of the first diagnosis, but the prescription was not renewed due to lack of patient compliance and because she declared herself able to avoid sesame-containing foods. Two years after the last DBPCFC with sesame, the patient suffered 2 systemic reactions within 2 weeks, after eating in the same restaurant during her summer holidays in the Eolian Islands, near Sicily, Italy. On the first occasion, the symptoms were generalized itching, facial erythema, breathlessness, cough, and sneezing. The systemic manifestations on the second occasion, 2 weeks later, were more severe: vomiting, cough, tightness in the chest, generalized itching, and laryngeal edema. These symptoms required emergency treatment with intramuscular adrenaline and intravenous corticosteroids. On both occasions the patient was absolutely sure that she did not ingest bread, biscuits, or other foods containing sesame. After these episodes the patient underwent routine skin prick tests (SPT) with a standard series of common inhalant allergens and with an extensive panel of food allergens (Lofarma SpA, Milan, Italy). SPT with inhalant allergens confirmed previous allergy to house dust mites and pollen from *Parietaria* species (wall pellitory); the

panel of food allergens was negative with the exception of sesame (wheal size 6 x 5 mm). Prick-by-prick tests with peanuts, poppy seeds, flax seeds, pine nuts, hazelnut, and sunflower were also negative, whereas the persistence of a positive reaction to sesame seeds (8 x 7 mm) was confirmed.

When we contacted the restaurant directly in order to clarify the possible cause of our patient's allergic reactions, we discovered that the menu included some tahini-based recipes. Tahini is a paste made from ground sesame seeds that originates in the Arab countries of the Mediterranean and represents a major ingredient of many dishes from the Middle East. It can be purchased fresh, in cans, in jars, or dehydrated. It can replace butter on bread and can be found in most Arab restaurants as a side dish or garnish. Nowadays, however, tahini is not only served in Arab restaurants and its consumption is widespread in Europe and the United States of America (2).

A DBPCFC was carried out again in the outpatient clinic with full facilities for resuscitation. The challenge was performed using 15 g slices of bread to be eaten in 2 steps. The active food contained a small amount of tahini (5 g), salt, and garlic, whereas the placebo contained hazelnut (5 g) and garlic. Unfortunately, the commercial tahini available for use in the challenge did not declare the content of sesame. No adverse reaction was observed to the oral intake of hazelnut-containing bread. About 15 minutes after the first bite of tahini-containing bread, generalized flushing and hives, abdominal pain, cough, and dyspnea appeared. The patient was promptly treated with intramuscular adrenaline, intravenous



Forced expiratory volume in 1 second (FEV<sub>1</sub>) before and after food challenge with tahini (sesame) and placebo.

corticosteroids, and intramuscular antihistamine, and the symptoms disappeared within 1 hour. At the onset of symptoms the forced expiratory volume in 1 second (FEV<sub>1</sub>) fell to 56% of the predicted value but returned to normal after inhaled salbutamol and the treatment mentioned above (Figure). An increase in serum tryptase concentration was observed (28.3 µg/dL; normal range, 4.8-13.5 µg/dL). The patient was advised to pay attention to possible ingestion of "masked sesame" and, again, to carry an adrenaline auto-injector with her.

## Discussion

Despite its increased availability and the potential harm for patients with sesame allergy, tahini (*tehina* in Hebrew, *tahin* in Turkish) has so far been considered a matter for gourmets, and therefore, it is not generally known by physicians and patients as a sesame-containing food and only a few cases of reaction to tahini have so far been reported [6]. Interestingly, a recent questionnaire survey of members of the Anaphylaxis Campaign raised the question of risks associated with tahini for patients with sesame allergy in Britain [8]. According to the results of the survey, tahini is responsible for some percentage of sesame-induced allergic reactions.

Sesame (*Sesamum indicum*) allergy is a serious and growing problem that extends beyond the countries where sesame is widely consumed [9]. Recently, the major epitopes of sesame beta globulin were characterized [10] and non-IgE mediated reactions to sesame have also been described [11]. Although the potential of foods such as sesame to induce anaphylactic reactions or severe systemic reactions is variable and depends upon the sensitivity of the patient [12], this allergen should also always be clearly identified as an ingredient.

As new products and recipes are being introduced from around the world on a regular basis, it is essential that those at risk are able to obtain information about allergens used as ingredients and as potential contaminants. Sesame is neither a staple food nor a valuable substitute protein source. People wishing to avoid sesame need to be aware of relatively few key foods (eg, bread or biscuits) and recipes that traditionally contain it. According to European Union food legislation, sesame, as an allergenic food, must be labeled when used as an ingredient in packaged foods. Nevertheless, the legislation does not take into account those foods sold as open (loose) products in restaurants, takeaways, and similar establishments, where ingredients may not be identifiable and cross-contamination may occur. Consequently, it is necessary firstly that patients and physicians are also informed about lesser known

allergenic foods. In addition, the legislation should be updated, following for instance the Swiss model, in order to make the declaration of possibly allergenic ingredients also compulsory in the case of freshly cooked foods.

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