



A Rare Case of Multiple Severe Anaphylaxis Caused by Thyme, Black Pepper, Wasp and Honey

Murat TÜRK, İnsu YILMAZ

Division of Allergy and Clinical Immunology, Department of Chest Diseases, Erciyes University School of Medicine, Kayseri, Turkey

Corresponding Author: Murat TÜRK ✉ mrttrk@gmail.com

ABSTRACT

Dried thyme, black pepper and honey are widely used worldwide. However, systemic allergic reactions to these substances are rarely reported. Here we report a 45-year-old case with multiple severe anaphylaxis to thyme, black pepper, honey and wasp, that occurred at different times. Her reactions to thyme, black pepper and wasp were IgE-mediated as confirmed with skin prick tests and/or serology. It was not possible to determine the underlying etiology of her honey allergy. Still, with her history and the risk of systemic reactions with bee secretions and/or pollen protein content of honey, she was advised not to consume any traces of the causative foods and informed about bee avoidance.

Keywords: Thyme, black pepper, wasp, anaphylaxis

INTRODUCTION

We report a case with IgE-mediated anaphylaxis due to thyme (*Thymus vulgaris*), black pepper (*Piper nigrum*) and wasp (*Vespula vulgaris*), and possible pollinator and/or pollen protein-induced anaphylaxis due to honey.

CASE PRESENTATION

A 45-year-old female patient was referred to our clinic with history of recurrent anaphylaxis that had last occurred about a year ago. A detailed history revealed that at her last anaphylaxis, she had a Mueller grade-4 systemic reaction after a wasp sting (1). She also described rapidly-evolving (within 1 minute) extensive pruritus, urticaria, laryngeal edema, difficulty in breathing, loss of consciousness and urinary incontinence after black pepper (*Piper nigrum*) and thyme (*Thymus vulgaris*) intake at different times, also without adding them to any kind of food. She also had multiple anaphylaxis episodes after honey intake. She stated that she never ingested these food again. She was admitted to the emergency room after every single reaction.

Her physical examination was normal. She had no comorbidities and no family history of asthma, allergic rhinitis, or anaphylaxis. She was asymptomatic when she was not in contact with these known allergens. Skin prick testing was performed for 25 commercial food allergens and was positive for mussel, orange, banana, peanut, hazelnut, clementine, tomato, walnut, kiwi and wheat flour. Positive control with histamine demonstrated a wheal with diameter of 6x5 mm and there was no reaction with saline as negative control. Among positive results, she only described pruritus with kiwi. Prick-to-prick tests with black pepper and thyme were both positive (9x8 mm wheal with 27x20 mm erythema, and 4x4 mm wheal with 6x6 mm erythema, respectively) (Figure 1A,B). Prick-to-prick tests with both black pepper and thyme were negative when applied to ten healthy volunteers. The patient showed no reaction to prick-to-prick test with honey. Complete blood count was within normal limits. Serum tryptase level was 4.3 ng/mL (Normal <11.2 ng/mL). Among hymenoptera skin prick tests, *Apis mellifera* showed a 3x3 mm wheal with 5x6 mm erythema. *Vespula* caused no reaction. Serum *Apis mellifera* specific IgE was



Figure 1. Prick-to-prick testing with dried black pepper (A) and thyme (B).

10.4 kU/L, *Vespula* specific IgE was 4.58 kU/L. Due to her reaction after wasp stings and the discordance between skin prick and specific IgE tests, components were studied. Api-m1 was 0.17 kU/L, Ves-v1 was 0.3 kU/L, and Ves-v5 was 0.42 (normal <0.35 kU/L). Venom immunotherapy with *Vespula* was planned; however, the patient refused it. She was re-questioned because of possible cross-reactions in the same family and stated that she could easily consume sage, basil and mint, which belong to the *Labiatae* family as thyme; however, she did not consume any other member of the *Piperaceae* family, which involves black pepper. The patient was advised not to consume any traces of the causative foods and informed about bee avoidance. Adrenaline auto-injector was prescribed and the patient was educated regarding its use.

DISCUSSION

Dried thyme and black pepper are widely used as spice and seasoning. As far as we know, this is the second reported anaphylaxis case with thyme in the literature. Unlike the first case, our patient also developed anaphylaxis to allergens with very different antigenic structures such as, black pepper, honey and wasp sting. Her reactions with thyme, black pepper and bee venom were proven to be IgE related by skin tests and/or specific IgE levels. Since the patient had severe anaphylaxis after exposure, provocation tests with these allergens or honey was not performed.

Benito et al. reported the first case with anaphylaxis due to ingestion of oregano and thyme (2). In their study, *in vivo* and *in vitro* tests were positive for both of these

spices and for basil, lavender, hyssop, marjoram, mint and sage (which are also from the same *Labiatae* family) and therefore they proposed that there might be cross-sensitivity between the plants belonging to the *Labiatae* family. Also there are two case reports which described contact dermatitis with rosemary and cross-reactivity with thyme (3, 4). Even though skin prick tests were not performed with other members of *Labiatae* family, we can presume that cross-reaction between the members of the *Labiatae* family is not seen in every case since our patient could consume sage, basil and mint without any problem after her first reaction with thyme.

Interestingly, our patient also had anaphylaxis with honey. Honey allergy is a rare condition. Bauer et al. proposed that pharyngeal and salivary gland secretions of the bee and pollen protein contents can both cause allergic reactions to honey (5). Aguirre et al. performed prick to prick tests with 9 different kinds of honey to a patient with honey-induced anaphylaxis and all of them were positive which points out that some bee proteins may be the possible allergen (6). Honeybees are the most common pollinator of thyme and it was reported that patients with allergic rhinitis sensitized to pollens of a plant family might develop systemic allergic reactions after ingestion of bee pollen that contained members of the same family (7). Components of the honey that caused the reaction and that we used in the skin prick tests were not evaluated extensively in our case and therefore it was not possible to confirm whether the reaction was caused by the bee proteins, the potential thyme proteins in the honey or another unknown allergen. Since black pepper is not endemic in our country, the presence of black pepper proteins in the honey does not explain the black pepper allergy in our patient.

Although spices are widely consumed, these allergens are usually hard to detect in food-induced anaphylaxis since they are generally not used alone. Patients who have severe anaphylaxis after ingestion of spices and live in the endemic areas where the responsible plants grow, such as in our patient, should be warned about possible systemic reactions after honey and bee pollen ingestion.

REFERENCES

1. Mueller HL. Diagnosis and treatment of insect sensitivity. *J Asthma Res* 1966; 3: 331-3.

2. Benito M, Jorro G, Morales C, Peláez A, Fernández A. Labiatae allergy: Systemic reactions due to ingestion of oregano and thyme. *Ann Allergy Asthma Immunol* 1996;76:416-8.
3. Armisen M, Rodríguez V, Vidal C. Photoaggravated allergic contact dermatitis due to *Rosmarinus officinalis* cross-reactive with *Thymus vulgaris*. *Contact Dermatitis* 2003;48:45-55.
4. González-Mahave I, Lobesa T, Del Pozo MD, Blasco A, Venturini M. Rosemary contact dermatitis and cross-reactivity with other labiate plants. *Contact Dermatitis* 2006;54:210-2.
5. Bauer L, Kohlich A, Hirschwehr R, Siemann U, Ebner H, Scheiner O, et al. Food allergy to honey: Pollen or bee products? Characterization of allergenic proteins in honey by means of immunoblotting. *J Allergy Clin Immunol* 1996; 97: 65-73.
6. Aguiar R, Duarte FC, Mendes A, Bartolomé B, Barbosa MP. Anaphylaxis caused by honey: A case report. *Asia Pac Allergy* 2017;7:48-50.
7. Choi JH, Jang YS, Oh JW, Kim CH, Hyun IG. Bee pollen-induced anaphylaxis: A case report and literature review. *Allergy Asthma Immunol Res* 2015;7:513-7.

