

Letter to the Editor

Two cases of anaphylaxis caused by perilla seed

To the Editor:

Perilla seed (*Perilla frutescens*) is one of the most popular spices in Asia, including Korea. Several *in vivo* and *in vitro* studies have demonstrated that perilla can suppress IgE-mediated responses,¹⁻³ and no previous cases of allergic reactions or anaphylaxis induced by the perilla seed have been reported.

We report 2 cases of anaphylaxis caused by perilla seeds in which IgE-mediated mechanisms were suggested. Before the study, the patients gave full informed consent, and the local ethics committee approved the entire protocol. Both patients presented with generalized urticaria, wheezing, dyspnea, and dizziness immediately after ingesting food containing perilla seeds. The clinical characteristics of these 2 subjects are summarized in Table I. Both patients had atopy and showed positive responses to common inhalant allergens, including house dust mite, following a skin prick test. In addition, both patients had had allergic rhinitis and asthma for several years.

A skin prick test administered using perilla extracts (10 mg/mL) resulted in a strong positive response, whereas none of the 10 nonatopic healthy control subjects had positive responses. To confirm the causal relationship, an open food challenge test with perilla seeds (500 mg) was performed in both subjects, and immediate onset of severe allergic symptoms such as urticaria, dyspnea, severe facial angioedema, and dizziness with laryngeal edema were noted. These conditions improved with the administration of epinephrine, methyl-prednisolone, and antihistamine.

To investigate the pathogenic mechanism involved, serum specific antibodies to perilla extracts were measured using ELISA, and high serum-specific IgE and IgG₄ antibody titers were detected in the patients' sera compared with the titers in sera of 20 nonatopic healthy controls. To evaluate cross-reactivity, ELISA inhibition tests with sesame (*Sesamum indicum*), a very widely used spice, and house dust mite, an allergen commonly causing sensitivity in Korea, were performed. Significant dose-dependent inhibitions were noted with addition of perilla extracts, whereas no inhibition was seen with sesame or house dust mite extracts (data not shown). Furthermore, IgE immunoblot analysis of the patients' sera identified 1 IgE-binding component with a molecular weight of 21 kd (Fig 1).

The identification of new food allergens is important because food allergy is a leading cause of anaphylaxis.⁴⁻⁶ Since perilla and sesame seeds first began to be used as major food additives in Asia, several cases of immediate hypersensitivity to sesame have been reported.^{7,8} However, the cases reported here are the first documented cases of perilla seed-induced anaphylaxis, and sensitivity arises mainly via the oral route.

The ability of sesame-derived protein and oil components to trigger IgE antibody-mediated immediate hypersensitiv-

TABLE I. Clinical characteristics of the 2 study subjects

Patient	Sex/age (y)	Skin prick test		Total IgE (IU/mL)	Associated conditions
		Allergen	Size (mm)		
KD	M/21	HDM	5 × 7/25 × 19	52	BA and AR
		Mugwort	6 × 9/18 × 37		
JW	M/20	HDM	10 × 7/42 × 34	273	BA and AR

AR, Allergic rhinitis; BA, bronchial asthma; HDM, house dust mite.

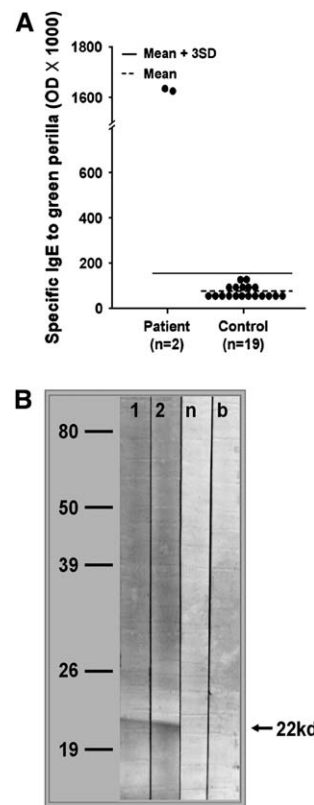


FIG 1. A, Serum-specific IgE levels determined using ELISA in the 2 patients and in 20 healthy controls. B, IgE-immunoblot analysis of perilla extracts using the sera of 2 patients (1, 2), nonatopic controls (n), and diluent buffer without serum (b).

ity and delayed hypersensitivity via cell-mediated immune responses has been demonstrated previously.^{8,9} In this study, 2 patients showed immediate responses to perilla seed on an oral challenge test and had positive skin prick tests. In addition, high serum-specific IgE and 1 IgE-binding component were noted, indicating that perilla seed ingestion can induce severe IgE-mediated allergic symptoms. Moreover, the patients had higher serum-specific IgG₄ antibody titers than

healthy normal controls. Further observations are needed to evaluate the clinical relevance of this antibody. Finally, ELISA inhibition results suggest that potential cross-reactivity with sesame extracts was very low. In conclusion, we have identified a new food allergen, perilla seed, in 2 patients with anaphylaxis in which an IgE-mediated response appears to be the pathogenic mechanism.

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