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A CASE OF BRONCHOSPASM AND URTICARIA CAUSED BY SHISO INGESTION

Shiso (*Perilla frutescens*), an annual herb of the mint family is traditionally used in Chinese medicine and is known to suppress IgE-mediated responses.^{1,2} Although 2 cases of anaphylaxis caused by Shiso seeds have been reported,³ there have been no documented cases of allergic reactions induced by the Shiso leaf.

We report a case of bronchospasm and localized urticaria caused by Shiso leaf ingestion. A 21-year-old man presented with chest tightness and periorbital urticaria immediately after Shiso leaf ingestion. The patient had a history of allergic rhinitis and oral allergy syndromes to apple and kiwi. On admission, the patient had atopic symptoms and showed strong positive responses to common allergens on a skin prick test (wheat size; alder, 18 × 7 mm; birch, 15 × 7 mm; beech, 14 × 5 mm; ragweed, 4 × 3 mm; Bermuda grass, 4 × 3 mm; and kiwi, 2 × 2 mm). He also demonstrated positive reactions to food allergens, including kiwi (0.71 kUA/L) and apple (2.08 kUA/L), on an Immuno CAP system. The skin prick test that was performed using Shiso leaf extract (10 mg/mL) resulted in a strong positive response (4 × 4 mm), whereas none of the 9 nonatopic healthy control patients had a reaction. An open food challenge test with 4.5, 9, and 18 g of Shiso leaf extract (the weight of 1 Shiso leaf is approximately 1.5 g), which is smaller than the amount in a typical meal, was performed on the patient. These tests resulted in an immediate onset of allergic symptoms, including perioral itching, swelling, shortness of breath, and decreases in lung function (15.5% decrease in forced expiratory volume in 1 second in 18 g of Shiso leaf ingestion).

We performed an open food challenge test with 250, 500, and 1,000 mg of seeds. The seeds had no effect on the patient. Serum specific IgE antibody to Shiso leaf extract (10 mg/mL) was measured using an enzyme-linked immunosorbent assay. No specific IgE binding was noted in the patient's sera or the samples obtained from the 9 nonatopic healthy control patients (Fig 1A). Finally, we performed a histamine releasability test using the patient's basophils. We found a significant increase in histamine-releasing capacity (77.85%) induced after incubation with 10 mg/mL of Shiso leaf extract, which was determined as the optimal concentration in the preliminary experiment as well as calcium ionophore (3 μM) and anti-IgE antibody (10 μg/mL), whereas minimal histamine release in response to Shiso extract was noted in 2 control patients (Fig 1B).

Although Shiso is widely used in drugs and foods, no allergies to the extract have been reported.^{1,2,4} We describe the first case of a systemic allergic response with bronchospasm and localized urticaria after ingestion of the Shiso leaf. Frequent allergic reactions after the ingestion of vegetables and fruits in patients

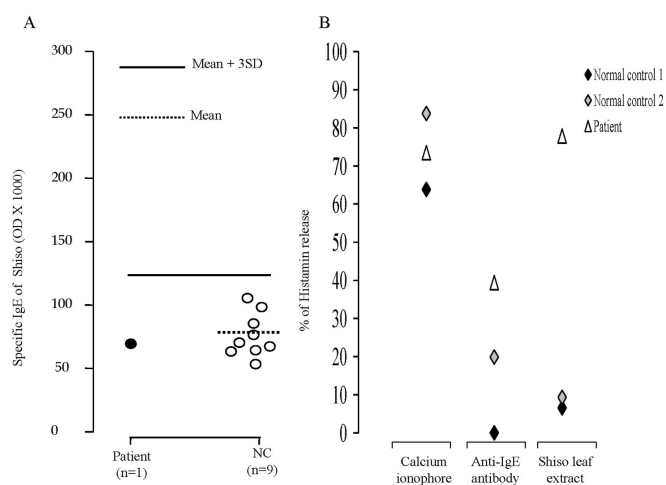


Figure 1. A, Serum specific IgE levels determined using enzyme-linked immunosorbent assay in the patient and in 2 healthy control patients. B, Histamine release test of perilla leaf using the sera of the patient and 2 healthy control patients.

sensitized to tree pollens may be derived from cross-allergenicity between these foods and tree pollens.^{5,6} However, we could not detect any serum specific IgE antibodies to the Shiso leaf extract. Therefore, the possibility of cross-allergenicity with tree pollens and other food allergens to which the patient was sensitized seems low.

In conclusion, we report a case of bronchospasm and localized urticaria caused by Shiso leaf in a patient with allergic rhinitis to tree pollens. This reaction was not mediated by IgE antibodies but rather by direct histamine-releasing effects.

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