

Unexpected spice allergy in the meat industry

To the Editor:

A 40-year-old man working in the meat industry reported that he had experienced rhinorrhea, sneezing, lacrimation, and ocular itching immediately after handling minced beef in the preparation of hamburgers. During this activity, he had added a commercial flavoring (SHTC) to the minced meat (40 g of flavoring per kilogram of meat). The label of the commercial flavoring listed the following ingredients: salt, starch, spices, E-221 (sodium sulfite), E-224 (potassium metabisulfite), E-301 (sodium ascorbate), E-331 (citrate), and E-120 (cochineal). The patient eats beef with no adverse symptoms.

After obtaining informed consent, we investigated the patient and 3 healthy control subjects. We conducted skin prick testing with the commercial flavoring by the prick-prick method.¹ A 10-mm wheal and a 19-mm flare were observed in the patient 15 minutes after testing. Results of skin prick testing with starch, cochineal, and raw beef were negative. When questioned, the manufacturer revealed that the spices included in the commercial flavoring were ginger, black pepper, and nutmeg. Skin prick test results were positive only with a ginger extract (1 mg/mL; wheal diameter, 12 mm; flare diameter, 30 mm) and fresh ginger (wheal diameter, 25 mm; flare diameter, 40 mm); they were negative with black pepper and nutmeg extracts. The 3 control subjects showed no response to any of the agents tested. Ginger-specific IgE levels (CAP-RAST System, Pharmacia Diagnostic) were above 100 kU_A/L. No specific IgE was detected with black pepper or nutmeg extracts. By CAP-RAST inhibition assays, the patient's IgE antibody was found to be inhibited by ginger extract but not by the other spices included in the commercial flavoring. SDS-PAGE/immunoblotting studies of ginger extract showed an IgE-binding component with a molecular weight of 17 kd. A methacholine inhalation challenge was negative.

Specific inhalation challenges were performed with freeze-dried ginger powder according to the method described by Pepys and Hutchcroft.² The subjects were instructed to pour the dehydrated ginger powder from one tray to another located 20 cm below. Only the patient experienced rhinoconjunctival symptoms (without changes in FEV₁). In addition, a double-blinded, placebo-controlled food challenge was performed with ginger. Increasing doses of dehydrated ginger or placebo (dextrose) were administered on separate days in opaque capsules at 30-minute intervals. A cumulative dose of 220 mg of dehydrated ginger elicited a clinical response.

Specific IgE antibodies to ginger have been detected in celery-sensitive patients,³ in a subject working with dust from spices in the food industry,⁴ and in a patient working in the production of gingerbread.⁵ Our investigation confirms that ginger could be a sensitizing agent through inhalation in an exposed worker and might give rise to IgE-mediated

occupational disease. Inhibition assays with ginger, nutmeg, and black pepper showed that there was a specific antibody response to ginger and no cross-reactivity with the other spices. It is important that manufacturers list specific food ingredients on their products to make consumers who have an intolerance of or allergic reaction to ginger aware that it is present.

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