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Letter to the Editor

Occupational allergy to *Triticum spelta* flour

Dear Editor,

Spelt (*Triticum spelta*) is a wheat species originated as a naturally occurring hybrid of a domesticated tetraploid wheat such as emmer wheat, and the wild goat-grass *Aegilops tauschii*. Cross-reactivity of spelt flour with other flours may be similar to that reported for wheat^{1,2} because of homologous allergens present in both flours. As spelt contains a lipid transfer protein (LTP), cross-reactivity with other plants containing LTP is possible.³

We report the case of a 25-year-old woman, with no previous history of atopic diseases, who developed pruritus and maculopapular lesions in forearms and neck, subsequently generalized, 10 min after manipulation of spelt and rye flours using gloves. The symptoms disappeared in 2 weeks without treatment. She presented the symptoms after 30 days of beginning a training program in a bakery, mainly with contact with spelt flour. The symptoms were reproduced again after handling spelt flour at the workplace. No history of respiratory symptoms associated with contact with flours, including spelt flour, or during pollen season. After the reaction, the patient denied the intake of products containing spelt flour, tolerating products with wheat and also rye flours. She has not presented new similar episodes since she avoided contact and ingestion of spelt flour.

Skin prick test with a battery of commercial extracts of flours including spelt flour, and alpha-amylase (BIAL-Aristegui, Bilbao) were negative. Serum specific IgE (ImmunoCAP) to spelt, wheat, omega-5-gliadin, wheat LTP, gluten, rye, alpha-amylase were negatives. Patient gave consent to challenge test with spelt flour: after 30 min of eating a first dose of 3 g of baked spelt bread from the bakery, the patient presented pruritus and erythema in neck and face, rhinitis without other systemic symptoms. Symptoms were alleviated with an oral tablet of 10 mg of cetirizine. Not delayed reaction appeared.

Spelt, wheat and rye flours extract was prepared from commercial flours (Biogran s.l, Paracuellos del Jarama, Madrid, Spain). Flours were dissolved in phosphate buffer solution overnight at 4 °C. After centrifugation the supernatant was secluded and then was dialyzed and later lyophilized. The extraction of gliadins and glutenins from spelt, wheat and rye flours was carried out following the method of Singh *et al.* based on the different solubility of gliadins and glutenins, the first soluble in alcohol and the last in acid or alkaline solutions.⁴ Protein concentration was determined according to Bradford.⁵ SDS-PAGE and immunoblot, were performed as described previously.^{6,7} Immunoblotting with the patient's serum showed IgE reactivity to a range of proteins of 12–14, 18, and 34–35 kDa from spelt flour extract and also in spelt glutenins

Western blot

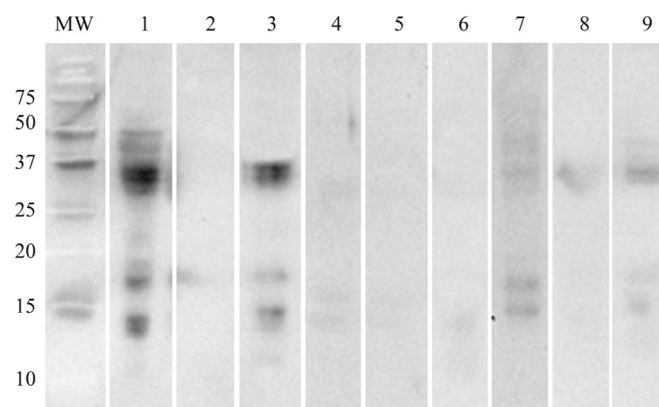


Fig. 1. Western blot with the patient's serum. MW, Molecular weights. Lane 1: Spelt flour. Lane 2: Spelt gliadins fraction. Lane 3: Spelt glutenins fraction. Lane 4: Wheat flour. Lane 5: Wheat gliadins fraction. Lane 6: Wheat glutenins fraction. Lane 7: Rye flour. Lane 8: Rye gliadins fraction. Lane 9: Rye glutenins fraction.

fraction (Fig. 1). Rye flour and rye glutenins fractions revealed a similar but fainter recognition than spelt flour.

Triticum spelta contains several previously described allergens.^{1,2} In our case, 3 allergens with a molecular weight of 35, 18 and 14 kDa were found by Western blot. Curiously, we have not observed the same allergenic bands in the blotting assay with wheat flour (*Triticum aestivus*) but with rye (*Secale cereale*). However, the patient tolerated contact with rye flour. Avoiding exposure and ingestion of spelt flour was recommended to the patient. Wheat-sensitive persons must therefore be taught to recognize the names of various forms of wheat on the ingredient listings of processed foods.⁸

Currently, there are very few reports in the literature of allergic reactions to spelt flour.^{9,10} In our case, glutenins could be the responsible of the allergic reaction presented by the patient. With an increased use in the last years, allergic reactions to spelt can be expected to increase and this food should be taken into consideration in the investigation of suspected allergic reactions to cereals and other grains.

Conflict of interest

FP and MC are employees of Diater Laboratories. The rest of the authors have no conflict of interest.

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