

Allergy to fishing bait

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Key words: allergy; angioedema; earthworm; fishing bait; *Lumbricus terrestris*.

• MANY CASES of sensitization to insect larvae used as fishing bait, arising both occupationally and in amateur fishing, are reported in the literature. Allergy to maggots is very common (1–3), and the larvae of *Galleria melonella* (4) and *Tenebrio molitor* (mealworm) (5) are reported to be potential allergens. Some *Annelida*, used as bait, are also reported to cause allergic syndromes, specifically *Eisenia foetida* (6) and *Marphysa sanguinea* (7). Sensitization to the common earthworm, *Lumbricus terrestris* (phylum *Annelida*, class *Oligochaeta*) has never been reported, despite being commonly used as bait by amateur fishermen.

A 14-year-old boy reported many acute episodes, over the last two years, of rhinorrhea, sneezing, nasal itching, asthma and oedema to the face and lips. On his last visit, two days had passed from the start of the last episode, and bronchospasm, nasal obstruction, and rhinorrhea were still present. A smear of nasal mucus, stained by a modified Papanicolaou method (8), showed a dense layer of eosinophils. The acute episodes relapsed after a few days of appropriate pharmacological treatment. Subsequently the patient was skin-prick tested with a large panel of pollens, moulds, mites and the major food allergens, with negative results. The young patient reported having a hobby for some years of fishing, and that these episodes appeared when he used earthworms as bait, which he collected by himself from humid earth. He correlated the appearance of symptoms to the action of piercing the bait onto the hook, which caused emission of a clear liquid, probably coelomatic fluid. He also stated that he had no symptoms when using maggots instead of earthworms.

We therefore performed a prick-by-prick test with fresh earthworm, minced

with a lancet and diluted 1 : 2 with saline. The skin prick test was clearly positive, with a wheal of 2 cm and pseudopodes. Three healthy volunteers tested in the same procedure were negative. To detect IgE antibodies, radioallergosorbent testing (RAST) was performed using earthworms collected by the patient. Briefly, the worms were homogenized, extracted overnight at 5% w/v in PBS, centrifuged, the supernatant filtered on Millipore membranes, and dialysed. The antigen was covalently bound to polystyrene balls as solid phase and tested by the RAST with commercial reagents (Sferikit, Lofarma SpA, Milan, Italy) against the patient's serum and the sera of three healthy individuals as negative controls. The RAST resulted positive with 3.2 RAST units, corresponding to class 2, for the patient's serum, and was negative with the control sera. The RAST to maggot with commercial reagents was negative, and total IgE was 1850 IU/ml (Sferikit). The patient was advised to avoid earthworms as bait, and the episodes stopped.

In conclusion, this is the first reported case of IgE-mediated allergy to earthworm, characterised by severe clinical symptoms.

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References

1. GONZALEZ GALAN I. Rhinoconjunctivitis and asthma provoked by Asticot maggots. *Allergol Immunopathol (Madr)* 1999;**27**:232–235.
2. SIRACUSA A, BETTINI P, BACOCOLI R et al. Asthma caused by live fish bait. *J Allergy Clin Immunol* 1994;**93**:424–430.
3. ESCRIBANO RODRIGUEZ MM, MUNOZ BELLIDO FJ et al. Allergy to maggots. *Allergy* 1997;**52**:1038.
4. STEVENSON DD, MATHEWS KP. Occupational asthma following inhalation of moth particles. *J Allergy* 1967;**39**:274–283.

5. BERNSTEIN DI, GALLAGHER JS, BERNSTEIN IL. Mealworm asthma: clinical and immunological studies. *J Allergy Clin Immunol* 1983;**72**:475–480.
6. VALERO SANTIAGO A, HUGUET CASALS J, SANOSA VALLS J et al. Angioedema, rhinitis and asthma provoked by fishing bait (*Eisenia foetida*) *Allergol Immunopathol (Madr)* 1989;**17**:331–335.
7. VALERO A, HUGUET J, MALET A, GARCIA CALDERON PA. Dermato-respiratory allergy induced by a marine worm (*Marphysa sanguinea*) used as fishing bait. *Ann Allergy* 1989;**62**:514–517.
8. TRIPODI S. Eosinofili nel muco nasale. *Med Bambino* 1985;**7**:497.

Allergenic potential of Kamut® wheat

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Key words: allergy; hypoallergenic cereals: Kamut®; Polish wheat; wheat.

• POLISH WHEAT (*Triticum turgidum* subspecies (ssp.) *polonicum*) is an ancient relative of modern durum (pasta) wheat (*Triticum turgidum* ssp. *durum*) which originated in the Middle East thousands of years ago. Today, this cereal has been recovered and is traded worldwide under the name Kamut® for use in the production of pasta, baked goods and frozen meals. Kamut® is frequently recommended as an excellent dietary substitute for wheat for wheat-hypersensitive (1) people because of its presumed low allergenicity (see for example <http://www.kamut.com>). However, no data regarding the allergenic properties of this grain are available in the literature.

Pooled sera of 10 patients, previously characterized as suffering from IgE-mediated food allergy to common and durum wheat products (2), were tested by immunoblotting for IgE-binding to Kamut® flour proteins. A sample of *T. turgidum* ssp. *polonicum* (kindly provided by Dr E. De Ambrogio, Società Produttori Sementi, Argelato, Italy) and a commercial Kamut® sample were compared with Durum wheat (Fig. 1). Protein extraction, SDS-PAGE and IgE-

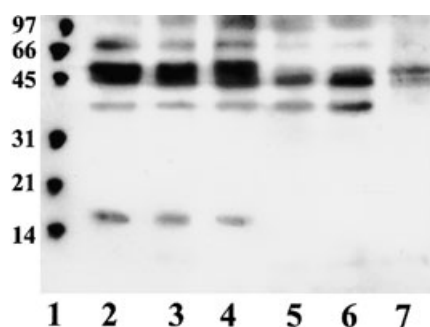


Figure 1. Binding of IgE-antibodies from pooled sera of wheat-allergic patients to the flour proteins of samples of *T. turgidum* ssp. *polonicum* (Polish wheat) (lanes 2 and 5), commercial Kamut® (lanes 3 and 6) and *T. turgidum* ssp. *durum* (Durum wheat) (lanes 4 and 7). Lanes 2–4: soluble proteins; lanes 5–7: insoluble (gluten) proteins. Molecular weight standard proteins are in lane 1.

immunoblotting were performed as previously described (2). Similar bands were bound by IgE of the pooled sera in the water/salt-soluble extracts of durum wheat and Kamut® samples (lanes 2–4), indicating a strong antigenic similarity between the two types of wheat.

In addition, when the insoluble (gluten) proteins were analyzed, at least two IgE-binding bands with molecular weights similar to those of the S-rich prolamins (3) were bound by the IgE of the pooled sera in both the *T. turgidum* ssp. *polonicum* and commercial Kamut® samples, but the IgE-

**Polish wheat, Kamut®,
is as allergenic as
pasta wheat.**

reacting band with the lower molecular weight was not detected in durum wheat (lanes 5–7).

Skin prick tests with in-house extracts (2) of the three wheat samples gave the same positive results in six wheat-allergic patients, confirming the results of the immunoblot experiments.

In conclusion, our *in vitro* and *in vivo* results indicate that no differences in allergic potential can be found between wheat and Kamut®. This is not surprising because of the close phylogenetic relationship of these cereals, as pointed out in a critical study of grains and celiac disease (4). Therefore, we strongly recommend that all individuals with a serious allergy to wheat should avoid consuming Kamut®, and they should be

cautious about grains genetically related to wheat that are proposed as hypoallergenic or safe foods.

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References

1. JOHANSSON SG, HOURIHANE JO'B, BOUSQUET J et al. A revised nomenclature for allergy. *Allergy* 2001;**56**:813–824.
2. SIMONATO B, DE LAZZARI F, PASINI G et al. IgE binding to soluble and insoluble wheat flour proteins in atopic and non-atopic patients suffering from gastrointestinal symptoms after wheat ingestion. *Clin Exp Allergy* 2001;**31**:1771–1778.
3. SHEWRY PR, TATHAM AS, FORDE J, KREIS M, MIFLIN BJ. The classification and nomenclature of wheat gluten proteins. A reassessment. *J Cereal Sci* 1986;**4**: 97–106.
4. KASARDA DD. Grains in relation to celiac disease. *Cereal Foods World* 2001;**46**:209–210.