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Evidence for higher sensitivity of recombinant Tri a 36 compared to omega-5-gliadin for diagnosis of wheat food allergy

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Background

Wheat is one of the most important food allergen sources. Using natural wheat allergen extracts for serological diagnosis of wheat-induced food allergy false positive test results are frequently obtained, in particular in grass pollen allergic patients. Therefore, Tri a 19, an omega-5-gliadin, which is known as a major allergen in wheat dependent exercise induced anaphylaxis (WDEIA) and in wheat food allergy in children, is widely used for the serological diagnosis of wheat-induced food allergy.

Methods

We have recently characterized Tri a 36, a low molecular weight glutenin as new major wheat food allergen. Here we compared recombinant Tri a 36 with ImmunoCAPs containing omega-5-gliadin for the detection of specific IgE antibodies in a population of wheat food allergic children (n=23) and grass pollen allergic patients (n=21). Wheat food allergic children had a clear clinical history of wheat food allergy with symptoms clearly attributable to wheat ingestion. Grass pollen allergic patients suffered from grass pollen-induced respiratory allergy but regularly ate wheat products without any clinical symptoms. Sera from both populations were tested by ImmunoCAPs containing wheat extract or omega-5-gliadin and by IgE ELISA to rTri a 36.

Results

Using wheat extract-based ImmunoCAPs all but one of the wheat food allergic patients showed allergen-specific IgE levels >0.35 kUA/L but 17 out of the 21 grass pollen allergic patients gave false positive test results. Eleven (i.e.,48%) of the wheat food allergic patients showed >0.35 kUA/L IgE against omega-5-gliadin and two of the grass pollen allergic patients gave false positive test results. Using rTri a 36, 14 (i.e., 61%) of the wheat food allergic patients were diagnosed and only one grass pollen allergic patient gave a false positive test result. Each of the sera from the wheat food allergic patients with IgE reactivity to omega-5-gliadin also reacted with rTri a 36.

Conclusion

Our results indicate that rTri a 36 has higher sensitivity and specificity than omega-5-gliadin for the diagnosis of wheat food allergy.

Disclosure of interest

None declared.

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