



# NEW HORIZONS — ALLERGY —

## *IgE antibodies to Omega-5 gliadin; a new diagnostic marker of severe immediate and/or exercise-induced reactions in wheat sensitized patients*

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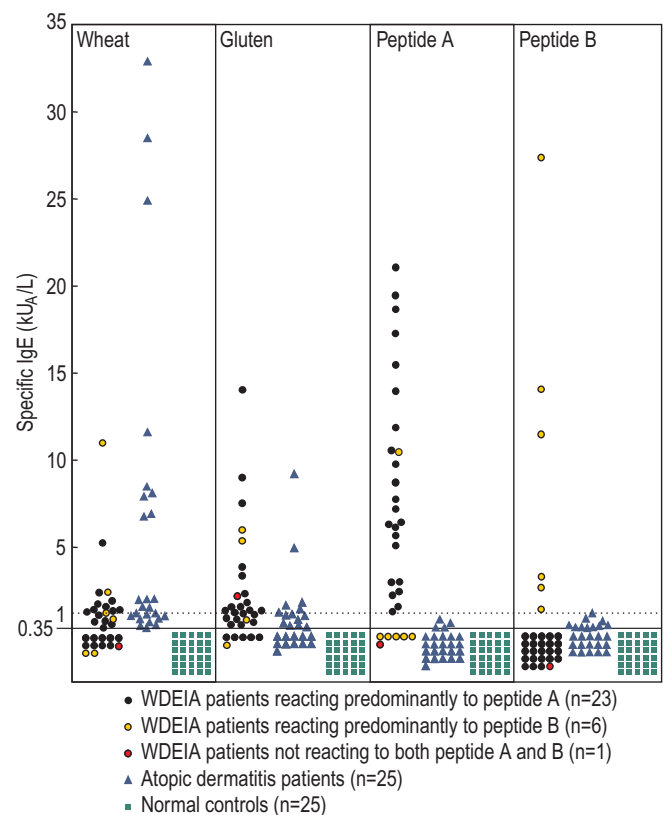
### Clinical background

Food-dependent, exercise-induced anaphylaxis (FDEIA) is a distinct form of food allergy induced by physical exercise. Symptoms are typically generalized urticaria and severe allergic reactions such as shock or hypotension. Whereas numerous food items are responsible for the development of FDEIA, wheat is reported to be the allergen with the highest frequency in Japan. Skin tests and *in vitro* serum food-specific IgE assays are currently used for diagnosis but their sensitivity and specificity are not always satisfactory.

A challenge test consisting of ingestion of the suspected food followed by intense physical exercise is the only reliable method of determining the causative food and of diagnosing the disease. The challenge test is, however, inconvenient and even dangerous because in some cases it induces an anaphylactic shock.

A reliable *in vitro* diagnostic method is thus required for patients with FDEIA. We revealed that wheat omega-5 gliadin and high molecular weight glutenin (HMW-glutenin) are major allergens in wheat-dependent, exercise-induced anaphylaxis (WDEIA). A simultaneous detection of IgE specific to epitope sequences of both omega-5 gliadin and HMW-glutenin using ImmunoCAP® is found to achieve higher sensitivity and specificity compared with the *in vitro* serum food-specific IgE assays currently used to diagnose WDEIA.

In addition, the recombinant omega-5 gliadin ImmunoCAP allergen contains the immuno-dominant peptides since the results correlated well with the IgE antibody binding to the identified major epitope peptides in omega-5 gliadin used to identify patients with WDEIA and wheat allergy.



Detection of specific IgE to wheat, gluten and epitope peptides of omega-5 gliadin (peptide A) and HMW-glutenin (peptide B) in WDEIA.

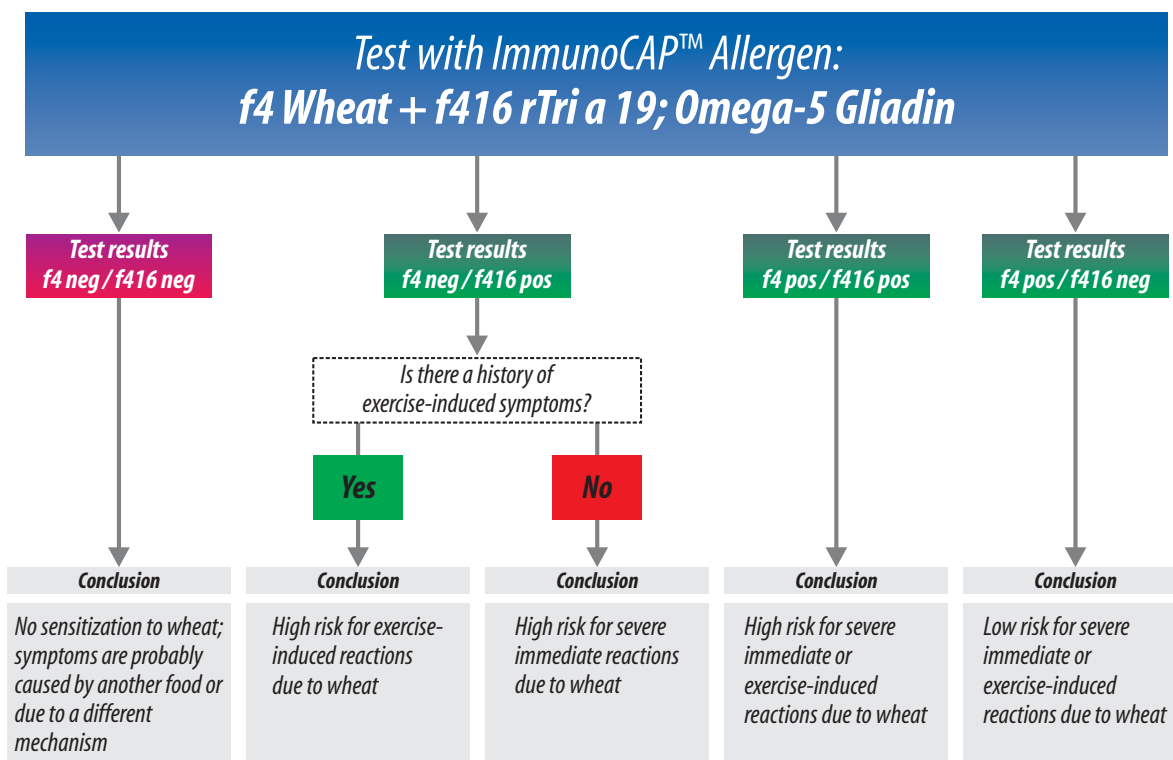
Reference: *New Horizons* Number 1, 2007

## Product List

### ImmunoCAP® for IgE antibody determination to rTri a 19; Omega-5 Gliadin

Product	Code	Size	Art. No.
rTri a 19; Omega-5 Gliadin	f416	10	14-4954-01

# Investigation of risk for severe immediate or exercise-induced reactions in patients with suspected wheat allergy



## Wheat allergies are often difficult to diagnose due to diffuse symptoms and different mechanisms involve

ImmunoCAP® Allergen f4 Wheat contains mainly water soluble components from the wheat grain while omega-5 gliadin is a water insoluble wheat protein. The use of ImmunoCAP® Allergen f416 rTri a 19; Omega-5 Gliadin as a complementary test to ImmunoCAP Allergen f4 Wheat can help to identify patients at risk to develop severe immediate and/or exercise-induced symptoms from wheat.

“Is there a risk for severe immediate and/or exercise-induced symptoms?” is a crucial question to ask when IgE antibodies to wheat are found or if there is a history of such symptoms.

This algorithm is a suggested diagnostic test procedure based on testing with both ImmunoCAP Allergen f4 Wheat and ImmunoCAP Allergen f416 rTri a 19; Omega-5 Gliadin. It includes interpretation of the possible outcomes.

## Some facts:

- IgE antibodies to omega-5 gliadin can be considered as a risk marker for two groups of patients; patients with severe immediate reactions and patients with exercise-induced reactions.
- Severe immediate reactions to wheat are important to identify, especially in children. Approximately 80% of patients with these reactions have IgE antibodies to both omega-5 gliadin and ImmunoCAP Allergen f4 Wheat. The remaining 20% of the patients have allergen-specific IgE antibodies to other components in wheat and will thus be positive with ImmunoCAP Allergen f4 Wheat.
- Wheat dependent exercise-induced anaphylaxis (WDEIA) is a rare but severe condition. Approximately 80% of patients with WDEIA have IgE antibodies to omega-5 gliadin. 30-50% of the patients with WDEIA have no specific IgE antibodies with ImmunoCAP Allergen f4 Wheat. However a majority of these patients are positive with ImmunoCAP Allergen f416 rTri a 19; Omega-5 Gliadin.

## References

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