

IgG / IgG4

Analyses for the Determination of Food Intolerances

Comparison: Food-Specific IgG and Food-Specific IgG4

IgG-mediated reactions are delayed hypersensitivities caused by food, which cannot be put on the same level as common allergies. The development of IgG antibodies – especially those of the IgG4 sub-category – is promoted by increased intestinal mucosa permeability (leaky gut syndrome). It leads to increased contact of immune cells with food allergens. Causes of increased mucosa permeability may be repeated antibiotic therapies and subsequent damage of the gut flora, gastro-intestinal infections, inflammatory gut diseases, pollution or stress. This results in a sensitization against antigens as well as increased production of allergen specific antibodies, which can subsequently be measured in laboratory tests.

The analysis of IgG-/IgG4 antibodies for the determination of food intolerances is in fact subject of controversial discussions, but studies confirm again and again that it is a helpful and valuable indicator for the determination of food intolerances. After more than 10 years' experience in the scope of IgG-/ IgG4 analyses this is also confirmed by experience. After elimination of severely reacting foods – depending on the basic disease – we observed a reduction of complaints in 60-80 % of the cases.

In 2015 **biovis'** and DST-Diagnostik analysed the IgG- and IgG4 reactions of 30 different plasma samples. In two additional samples only IgG4 concentrations were measured. All samples were from clinically healthy patients. We tested 27 different food extracts contained in typical German diets, which are frequently not tolerated: wheat, buckwheat, rye, rice, baker's yeast, milk, sheep's milk, codfish, prawns, pork, egg, salmon, peanuts, hazelnuts, almonds, apple, kiwi, banana, potato, tomato, onion, mushrooms, carrot, green beans, mustard and soy bean.

1674 data points were recorded for IgG and IgG4 via ELISA assays: This is a common in-vitro test procedure in the scope of which the bonding grades of antigen specific total IgG4 respectively the content of total IgG in blood serum is recorded and quantified by photometric recording.

Table 1 shows the selection criteria for the diagnosis of IgG4 mediated food intolerances and highlights the correlation of increased specific sensitization with freely circulating IgG4 antibodies in blood, which are suitable for the determination of the intensity of respective sensitizations.

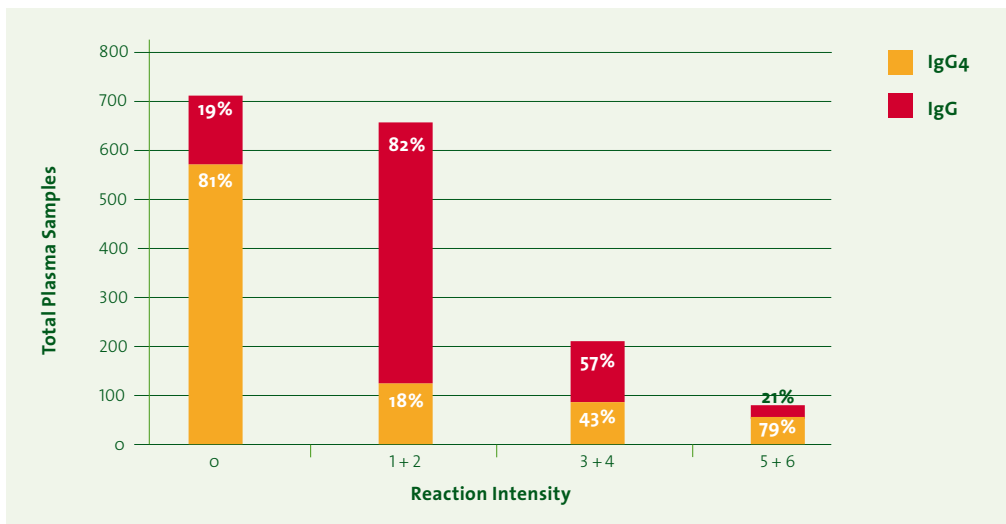
Intensity	Concentration	Unverträglichkeit
0	0.00 - 0.34	none
1	0.35 - 0.69	minor
2	0.70 - 3.49	minor to moderate
3	3.50 - 17.49	moderate
4	17.50 - 49.49	high
5	50.0 - 99.99	very high
6	≥ 100	extremely high

Table 1: Correlation Antigen-Specific IgG4 Concentrations, Intensity and Extent of the Intolerance

The following diagrams illustrate the data analyses based on IgG and IgG4 reactions on sheep's milk extract.



Picture 1: Sum of the reaction levels of IgG and IgG4 to sheep's milk extract



Picture 2: Sum of all IgG and IgG4 reactions

Summary:

Like can be seen on the diagram of Picture 1, IgG4 antibodies show minor reactions of categories 1 – 2 much more rarely – and mostly without clinical relevance. A similar pattern can also be found in picture 2, it shows 1674 allergens sorted based on their reaction level and subsequent evaluation. IgG4 also more rarely shows minor reactions of intensity 1+2. If IgG4 reacts, these reactions are mostly stronger clinically relevant reactions.

Quellen: 1) Zar, S., Benson, M. J. & Kumar, D. Food-specific serum IgG4 and IgE titers to common food antigens in irritable bowel syndrome. *Am. J. Gastroenterol.* 100, 1550–1557 (2005).
 2) Turnbull, J. L., Adams, H. N. & Gorard, D. A. Review article: The diagnosis and management of food allergy and food intolerances. *Aliment. Pharmacol. Ther.* 41, 3–25 (2015).

**Do you still have questions?
 Please call us, we will gladly help you.**

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