

# CROSS REACTIONS

The immune system produces so-called antibodies to fight foreign invaders. The best known antibodies are: IgA, IgM, IgG, IgE. Each of them has different properties and tasks to fulfil to fight foreign agents. Common to all of them is that they do not recognise the invader as a whole, but recognise specific or less specific parts of it, most of the time parts of certain proteins from the invader. These parts are called epitopes.

This means: If two different invaders have common epitopes, under certain circumstances an antibody produced to recognise invader 1 may also recognise invader 2 - although the immune system has never encountered invader 2 before. This does not mean that the reaction to the second agent is false; it is a so-called cross-reaction. The same problem exists in classic type I allergy (IgE).

## Relevance for ImuPro

If we transfer this to the ImuPro results, it might be that IgG antibodies to a food have been detected, even though the food was never eaten before. This reaction is not necessarily a false positive, but could be a cross-reaction.

**Example:** Your client has been tested positive to oysters, but he is sure that he has never eaten oysters before. This could be a cross-reaction to dust mites. Dust mites and all invertebrates - like mussels, oysters, lobster, crab, scampi etc. - have a common antigenic protein, called tropomyosin; the quantity of tropomyosin differs from species to species. So if your patient is sensitised to dust mites, he might have a positive test result to one or several of the seafoods mentioned above. It is also possible that he has been previously sensitised to another seafood. Whether or not a cross-reaction occurs depends on the epitope, on the amount of the protein present in the different species and on its accessibility. So your client might be positive to one or two of the seafoods, but not to all.

**NOTE: IN THE PARTICULAR CASE OF SEAFOOD AS A CROSS-REACTION TO DUST MITES, WE RECOMMEND CHANGING THE MATTRESS AND PILLOWS AND USING AN ANTI-DUST MITE MATTRESS PROTECTION IN THE FUTURE. REACTION TO SEAFOOD MIGHT ALWAYS BE AN INDICATION FOR A SENSITISATION TO DUST MITES.**

Cross-reaction exists between a huge variety of foods but also from non-food to food. Certain pollen in particular may exhibit a high number of cross-reactions to food. The most prominent are birch and mugwort. The table on the following page shows the best known cross-reactions between food and non-food allergens.



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Mugwort					
Aniseed	Apple	Artichoke	Chamomile	Cardamom	Carrots
Celeriac	Cinnamon	Coriander	Cucumber	Cumin	Fennel
Garlic	Ginger	Grape	Kiwi	Lychee	Mango
Melon	Nutmeg	Oregano	Paprika	Parsley	Pepper
Potato	Sunflower seed	Tomato			
Birch tree					
Almond	Apple	Apricot	Carrots	Cherry	Fig
Hazelnut	Kiwi	Lychee	Nectarine	Pear	Plum
Soy	Walnut				
House dust mite					
Crayfish	Lobster	Mussels (blue)	Octopus	Oysters	Scallop
Shrimp, prawn	Snails	Squid, cuttlefish			
Latex					
Avocado	Banana	Fig	Kiwi	Mango	Melon
Papaya	Peach	Potato	Spinach	Sweet chestnut	Tomato
Grass pollen					
Beans	Lentil	Peanut	Peas	Pumpkin	Tomato

Note: This list is intended to give an overview of possible cross-reactions. No liability is assumed for either its completeness or accuracy.

## How to deal with cross-reactions?

Cross-reactions are not false positive reactions. So they should first be considered as “real” reactions. It is known that not all diagnostically revealed cross-reactions lead to clinically relevant symptoms. This again applies to type I allergy (IgE) or type III allergy (IgG). Therefore a provocation diet is essential to evaluate the clinical impact of the diagnosed cross-reaction.

