Food Allergy

A food allergy is an abnormal reaction of the body's immune system towards certain foods. The immune system is a protective mechanism that helps the body defend against infections and/or eliminate foreign substances. When the immune system recognizes the presence of a substance as foreign or senses an infection, one way it reacts is by producing a sticky protein called an antibody. An antibody is produced such that it recognizes and attaches fairly specifically to the substance it was made to react with (antigen). Once the antibody attaches to the antigen, the antibody-antigen complex is then taken up by immune cells and eliminated. In allergies, antigens are called allergens. With food allergies, certain foods inadvertently trigger the activation of the immune system, resulting in production of antibodies against these food items. The cascade of events that ensue precipitate the adverse symptoms that are associated with food allergies.

Two types of food allergies exist. The more commonly known is Type I (immediate-onset hypersensitivity), also referred to as IgE-mediated hypersensitivity. Antibodies produced in type I hypersensitivity are of the IgE type, and typically, the symptoms appear within seconds or minutes of exposure to the offending food allergens. Sensitized individuals have the IgE antibodies circulating freely in the body, as well as, bound to immune cells such as mast cells and basophils that contain histamine and other immune system mediators. Upon encounter with the allergen, the antibody attaches itself to it and activates the immune cells to release the histamine and other mediators. This release of histamine and other mediators leads to the characteristic symptoms which can include stomach cramping, diarrhoea, skin rashes, hives, swelling, wheezing, or most seriously, anaphylaxis. Type I hypersensitivity affects children more often than adults. About 2.5% of adults and 6-8% of children are affected by IgE mediated food allergies. Type I allergies generally involve 1-2 allergens, and there may be a genetic basis for this type of affliction in some. Allergies in children most commonly involve eggs, milk, peanuts, soy, and wheat. Whereas with adults, type I food allergies can involve fish, shellfish, peanuts, tree nuts, fruits, vegetables or seeds.

The second type of food allergy is referred to as non-IgE mediated or type III hypersensitivity. It is also known as delayed-onset hypersensitivity. This form of food allergy is believed to be much more prevalent within the general population and appears to involve IgG type antibodies (rather than IgE). IgG antibodies are not typically bound to mast cells and basophils; therefore, they do not bring about all the symptoms observed with type I allergies. The IgG antibody attaches to the food allergen to form immune complexes, which then precipitate the symptoms associated with type III hypersensitivity. These symptoms may appear within a few hours or develop over several days. Symptoms of Type III hypersensitivities are quite varied but they tend to be less acute than those encountered in type I. Type III allergies may involve as few as 1 or 2 foods, but can also involve multiple foods. Due to delayed appearance of symptoms, it is sometimes difficult to detect this type of allergy symptomatically (self-diagnose) or associate it with certain types of food. Laboratory testing can be useful for detecting the presence of food-specific antibodies, and may assist in identifying food or food types to which an individual's immune system is sensitized or reactive to. Laboratory allergy testing can also be helpful in determining whether an individual has overcome a food allergy.

Multi-food Allergy Screen

Stero-Chrom Analytical Laboratory employs a high quality 90-food IgG test. It is an ELISA type test to screen blood samples for the presence of food specific IgG antibodies to various food allergens. ELISA stands for Enzyme Linked Immunosorbant Assay, and it is a sensitive analytical method by which antibodies are detected in blood. Quality control is performed using positive and negative controls with each patient sample to ensure reliability and consistency in results. Test results are presented in a colour graphical format to facilitate easy assessment at a glance.
The graphical report has been designed to be user-friendly and easy to evaluate. Numerical values are provided so that individual values can be assessed or compared with follow-up testing. Normal IgG levels appear green, while increased levels appear as orange (mild-equivocal) or red (high). It is not unusual to detect the presence of some IgG antibodies to foods due to a low-level of immunological activity or because of a small degree of cross reactivity with allergens. However, when the immune system is reactive (sensitized) to particular foods, significantly increased levels of those specific IgGs will be produced/observed.

Please note:
Results should always be interpreted in light of clinical history, current symptoms, detailed dietary lifestyle and other factors. Additional background information may be necessary to effectively interpret results. For example, results may show elevated levels of IgG to foods one does not eat nor experience symptoms with (unexpected antibodies). A possible explanation is that some foods share significant similarities in their antigens and will cause the antibody to cross-react. Therefore, the test will show elevated levels of antibody to the cross-reacting foods as well. One such example is where the allergen component for Birch pollen has 70% similarity to the allergen in apple, hazelnuts, and carrot. Consequently, an individual with an allergy towards Birch pollen may show increased antibody levels to apple, hazelnuts, and carrot (and such individuals may/may not experience allergy related symptoms to these foods). So it is important to know that foods can share allergenic similarities and test results of antibody testing need to be interpreted accordingly, along with symptoms and clinical history. Some additional examples of known shared allergens:

- Alder pollen, almonds, apples, celery, cherries, hazel nut, parsley, peaches and pears;
- Grass Pollen, melons, orange, Swiss chard, tomatoes, watermelon, and wheat;
- Mugwort Pollen, carrots, celery, coriander, fennel, melons, parsley, peppers, spices, sunflower seed and watermelon;
- Ragweed Pollen, apples, banana, cantaloupe, chamomile tea, honey, honeydew, nuts, sunflower seeds and watermelon.

Another possibility for the presence of unexpected antibodies is that one may not be aware of consuming certain items because those foods may not be listed in the ingredients of some processed foods. Conversely, expected elevated levels of an antibody may not be observed. A possible reason is that elevated level of IgG antibody to an allergen requires ongoing exposure. Therefore, abstinence may reduce the antibody levels to within the normal range.

After Testing

Your Clinician can assist with the interpretation of results and help with a suitable plan of dietary action, if necessary, and recommend follow-up or further testing where warranted. To ensure optimal results, patients with allergies should take an active role in their treatment by being knowledgeable about their condition, learn about and avoid exposure to allergens that can trigger symptoms (and this may require lifestyle modification), and understand reasons and methods of dietary modifications and follow the advice provided by their Health Professional.