

Food intolerance – causes, detection and interpretation

Hypersensitivity or intolerance against certain foods continues to be controversial topic. What is the mechanism behind it, whether and how to determine it, how to proceed after receiving test results?

**Food intolerance does not have a single underlying mechanism** and thus, there is no single test that would detect all forms of hypersensitivity or intolerance. Depending on underlying methodology, various tests may yield different results. In most cases, food intolerance tests assess the **immunological response**, induced in human body because of partially digested food particles or increased intestinal permeability (“leaky gut”). Such analyses include testing for antibodies (IgG Elisa Test), cytotoxic response of leucocytes, or opioid-like peptides resulting from incomplete digestion of casein and gluten.

Immunological response is produced both in case of **food allergy** and **food intolerance**. While allergic response has distinct symptoms and manifests quickly, the symptoms indicating food intolerance come in many different forms and are experienced a few hours or even a few days later. This makes it much more difficult to link the symptoms and potential hypersensitivity.

If large, partially digested food particles enter the body through intestinal mucous membrane, they invoke allergy-like immunologic response. Usually, our intestinal immune system does a good job distinguishing between useful (such as dietary protein) and pathogenic foreign proteins. But occasionally it may send out *wrong* response and treat generally safe dietary protein as pathogenic, inducing a chronic inflammation of the mucous membrane. If such food products are consumed on a daily basis, the inflammation does not resolve until determining and eliminating particular food or antigen from the diet.

Another cause of hypersensitivity includes toxins and metabolic disorders (e.g. enzyme deficiency). **Enzyme deficiency** is the reason for lactose, casein and gluten intolerance. **Lactose intolerance or hypolactasia** is a metabolic disorder caused by lactase deficiency (enzyme that breaks down lactose). Resulting compounds irritate the bowel and cause discomfort, bloating, diarrhoea, and abdominal pain. While people with lactose intolerance can still enjoy lactose-free products, those with **casein or milk protein intolerance** should substitute dairy products with alternative sources of protein and micronutrients.

**Gluten intolerance** is mostly associated with such a serious condition as **celiac disease or gluten enteropathy** occurring in genetically susceptible individuals induced by the ingestion of wheat, rye, barley (oat) and products thereof. The proteins contained in these grains create toxins that destroy the villi inside the small intestines, preventing the normal absorption of nutrients from food. The only treatment for celiac disease and the inflammation of the small intestine cause includes following lifelong gluten-free diet.

**Non-celiac gluten sensitivity (NCGS)** represents a complex of symptoms similar to irritable bowel syndrome (IBS) that improve once gluten-free diet is introduced and celiac disease and wheat allergy have been excluded. The pathogenesis of NCGS is not yet well understood. Other factors that may contribute to NCGS symptoms include enzyme inhibitors and certain carbohydrates, intolerance to which is associated with IBS. As no biomarkers for diagnosing NCGS are available, its diagnosis is made only by elimination diet.

In case of partially digested food, body may contain large amounts of **opioid peptides**. These morphine-like compounds originating from partially decomposed peptides in the small intestine may absorb and have psychotropic effect and cause disturbance in the functioning of

neural transmitters (inhibit perception, cognition, emotions, mood and behaviour, motor function, etc.). Presence of such morphine-like compounds (from gluten and casein) can be detected in urine sample.

Another potential reason for food hypersensitivity may be due to elevated levels of compounds such as *histamine*, tyramine and other biogenic amines. In that case, people often relate their symptoms (such as migraine) with consumption of certain foods (e.g. pickled, aged, smoked, fermented or marinated foods).

If **test results** indicate intolerance towards majority of tested foods, it is necessary to determine the actual cause for such extensive response. When using IgG test, such result may indicate intestinal or bowel hyperpermeability (“leaky gut”) that places the body’s immune system in constant state of alert. Besides establishing proper diagnosis, it is recommended to introduce relevant dietary changes to support the intestinal mucous membrane. Instead of eliminating all the reactive foods at once, remove one suspected food from the diet for a period of time (up to two months) and wait to determine whether symptoms resolve during that time period. Then, if symptoms resolve, reintroduce the food to see whether the symptoms reappear. If the symptoms do not resolve, eliminate the next potential “culprit”, and so on. It might be a good idea to start with removal of milk and wheat (if indicated).

Various tests do help to cut down the list of potential causes for intolerance, but even then it is necessary to carry out elimination diet and maintain a balanced diet. Considering the complexity of food intolerance cases, it is wise to seek help by consulting competent **dietician, nutrition therapist or health specialist** in order to avoid confusion and reduce test-related costs. In a few people, underlying conditions can either cause symptoms or make food intolerances worse. In these cases, treatment for the underlying condition should be a priority in order to allow symptoms to improve. Restricting the diet on your own initiative should be avoided, because too high expectations, inadequate interpretation of results and extreme diets may be harmful to your health and not beneficial.

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