

Food Allergy (Wheat Allergy Vs Celiac Disease)

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ABSTRACT

Wheat allergy, one of the top eight food allergies, refers to the allergic reaction to those foods which contains specific proteins found in wheat. Someone with a wheat allergy will experience an immediate reaction soon after eating wheat and this may be indicated by hives, face swelling or vomiting etc.

A wheat allergy is different than celiac disease, which is an autoimmune disorder, and the person suffering from it needs to follow gluten free diet. However, both persons either with wheat allergy or celiac will need to avoid wheat in their diet.

KEYWORDS: *Celiac Disease; Non-Celiac Gluten Sensitivity; Glutenin; Prolamin Allergy; Biopsy*

WHEAT ALLERGY

As discussed before, wheat allergy is defined as an immune reaction to proteins in wheat. Someone's body with a wheat allergy may stimulate a type of white blood cells, called B-cells, which consequently releases immunoglobulin E (IgE) antibodies to attack the wheat and other body tissues releases natural chemical messengers to alert the rest of the body that there is a problem. This reaction occurs very fast and usually involves various indications like nausea, abdominal pain, itching, swelling of the lips and tongue, trouble breathing, or anaphylaxis which can take life of a person.

A person suffering with a wheat allergy needs to avoid any form of wheat, but do not need to avoid gluten from non-wheat sources. In some cases, children who are allergic to wheat may surpass the symptoms, but adults with this allergy usually suffer from it throughout their life and the only treatment is a complete wheat-free diet [1].

CELIAC DISEASE

Celiac disease, abbreviated as CD, is an autoimmune disease that occurs when a person ingests gluten. This usually occurs with a person who inherit the genetic predisposition i.e. the likelihood of developing celiac disease, and when consumes gluten, the disease is activated.

Soon after the activation, a person may face stress, trauma and sometimes viral infections. On the contrary, in celiac disease, the immune system doesn't attack gluten; but instead gluten ingestion triggers the immune system to attack the body's own tissue, in the form of intestinal lining.

Dermatitis herpetiformis is one type of celiac disease that results in skin rash. Currently, the only treatment for celiac disease is to eat a gluten-free diet for life, but researchers are experimenting other methods as well like introducing some drug to outgrow this disease etc [1].



(Figure)

WHEAT ALLERGY AND CELIAC DISEASE: WHAT IS THE DIFFERENCE?

Wheat allergy, often confused with celiac disease, can be discriminated with celiac disease because of the involvement of different immune cells and antibodies. Both of them are conditions whose primary treatment is avoidance of specific dietary components.

Gluten is a protein found in grains, such as wheat, barley and rye. Some people are allergic to it, but that is not the same as a celiac disease. People with the symptoms of celiac might need to be tested with skin prick test, but only few people with wheat allergy have celiac disease.

There are four major classes of wheat proteins: albumins, globulins, prolamins and glutelins. Prolamins are known as gliadins and glutelins are called glutenins. So basically, these two protein groups form the classic glutes which is the prime causative agent of celiac disease (CD).

NON CELIAC GLUTEN SENSITIVITY

Synonymously known as gluten intolerance or gluten sensitivity, non-celiac gluten sensitivity involves a different immune system reaction than celiac disease. A person with gluten sensitivity will experience a direct reaction to gluten - i.e. your body views the protein as an invader and fights it with inflammation both inside and outside your digestive tract [2].

OTHER KINDS OF ALLERGIES

- **Prolamin Allergy:** Prolamins are a more frequent allergen; however gliadins are associated with the most severe disease.
- **Glutelin Allergy:** Glutenin is a predominant allergen in wheat.

DEFINITIVE TESTING FOR DIFFERENT ALLERGIES

Because the symptoms of both allergies are so similar but the medical conditions are different, it is important to have definitive tests for diagnosis. Also, a gluten-free diet is not without its repercussions, which is another reason to undergo testing. The most common testing procedures are:

- **Blood Test:** This determines the level of antibodies in the blood in response to a diet that contains gluten. The person is asked to consume gluten for six weeks prior to the test.
- **Biopsy:** A positive blood test will be followed by a biopsy of the small intestines for confirmation. Any damage to the villi in the intestines will show up in this test, thus confirming the disease.
- **Gene Testing:** If both the above tests are indecisive, then the doctor might suggest gene testing as it will detect the most common genes present in those with celiac disease. A negative test rules out the condition but a positive test does not establish it. If positive, it needs to be followed by a gluten challenge and a biopsy [3].

The physician first rules out celiac disease through celiac disease blood tests. If the tests are negative, then you should go for a gluten challenge, i.e. first eliminating gluten from your diet to see if your symptoms cleared up, and then again introducing it in your diet, to see if symptoms return. It will be clear that if you experience symptoms when your diet contains gluten, but those symptoms clear up when you're following the gluten-free diet, then you might have gluten sensitivity.

SYMPTOMS OF WHEAT ALLERGY

Food allergy symptoms which are triggered by wheat, usually occur quite soon after it is ingested within one to two hours. Sometimes the symptoms begin within seconds or minutes. Non-serious symptoms include hives anywhere on the body, or a tingling or itchy feeling in the mouth. There may be facial swelling, which is not serious in itself unless any of the more severe symptoms listed below are also present. More severe symptoms may include:

- Swelling in the throat
- Difficulty breathing
- Severe asthma
- Severe abdominal pain, nausea and vomiting

In a few cases there is a sudden fall in blood pressure and the person may become weak and may have a sense of something terrible happening. This may sometimes lead to collapse and unconsciousness.

WHEAT-FREE FOODS VS GLUTEN-FREE FOODS

A wheat-free food simply doesn't contain the grain wheat. Some foods, such as wheat bread, pasta and cereal, obviously contain wheat. Other ingredients contain sources of wheat which are hidden and harder to identify. It is important to read labels carefully to see if they contain wheat, flour or wheat germ. The U.S. Food and Drug Administration require companies to label wheat in foods.

A gluten-free food doesn't contain the protein gluten, which is found in the grains wheat, rye and barley. Therefore, it is obvious that all gluten-free foods are also wheat-free. However, a wheat-free food may still contain gluten from rye or barley. It's important to read food labels carefully when eating a gluten-free diet. If you see anything indicating wheat in the product, then it might click you that it is not gluten-free. Also, lookout for ingredients derived from barley and rye, such as beer, malt and modified food starch. If you're in doubt, eat only those foods whose label clearly states that the food is completely gluten-free [4].

WHEAT ALLERGY AVOIDANCE LIST

The following ingredients found on a label indicate the presence of wheat protein:

- All-purpose flour Bread - any type made with white flour, wheat flour; bread crumbs
- Flour - all purpose, bread, high gluten, high protein, instant pastry,
- Gluten - wheat gluten, vital gluten, vital wheat gluten,
- Malt, malt extract
- Noodles, pasta
- Triticale

Wheat is sometimes found in

- Artificial flavoring,
- Natural flavoring
- Gelatinized starch,
- Malt dextrin Monosodium glutamate(MSG)
- Oats
- Soy sauce [5]

BAKING AND COOKING TIPS

Home baking is a safe way of having wheat-free bakery products. Alternative flours can produce excellent products and the nutritional content can be higher because they are less refined.

Some substitutes for 1 Tbsp. wheat flour:

- 1 tsp. potato starch flour
- 2 to 3 tsp. rice flour
- 1 tsp. arrowroot starch
- 2 tsp. tapioca flour
- 1 tsp. cornstarch

Non-wheat flours have different properties from wheat. This can make them much trickier to use than wheat flour:

- Products prepared with non-wheat flours tend to be drier, coarser, and heavier.
- Bread crusts will be rougher and browning will be lighter.
- Flours with less gluten such as rice, potato, and soy do not rise well, therefore, requiring more leavening than wheat flour.
- Gum added to bread batter can also improve the texture.
- The texture of products made with substitute flours can also be improved by adding dried fruits, wheat-free chocolate chips or nuts to the recipe.
- Frosting also improves the flavor and adds moisture to products.
- One can refrigerate the dough before baking for cookies and doughnuts made with low gluten flours to make the dough easier to handle and improve the texture of the final product.
- Baking in smaller pan sizes at lower temperatures for longer time also improves product texture and quality.
- By combining two to three flour substitutes rather than only one kind of flour, one will be able to make products more familiar wheat flour products. Also, some flours tend to mix into batters better if they are sifted into the batter while mixing and thus prevent lumping.
- It is important to add the flour gradually because these have a high tendency to get thickened than wheat flour does.
- If using no eggs, adding only enough flour to make batter the consistency of a normal, wheat flour cake batter is acceptable as adding more flour than required will result in a doughy, heavy product.
- Cakes made with wheat-substitute flours often tend to be free from moisture.
- Adding variety of fruits or vegetables, like zucchini, pumpkin, carrots will help to increase moisture and improve texture and therefore will result in a more nutritious product.
- Sauces can be made firmer by adding arrowroot, cornstarch, potato starch, rice starch or tapioca.
- Wrap baked products tightly and store in the freezer when able, as low gluten products tend to absorb both moisture and flavors quickly [6].

IMPORTANCE OF DIETITIANS IN PROMOTING TECHNOLOGY TO PROVIDE KNOWLEDGE ON ALLERGENS TO PATIENTS

We are living in an era of modern technology and use of it in healthcare is on rise. So in addition to development of print material, dietitians can create awareness for patients on the use of websites of containing information on celiac disease such as Dietitian Association of Australia and British Dietetic Association. Similarly, nowadays apps on Android phones are available for gluten free and wheat free diets.

However, the limitation of such websites and Apps is that it provides information regarding western foods, thus limited implication in Pakistan. Also the use of technology can save patients time and money. Dietitians and Nutritionists can develop awareness how to use this technology. Moreover, there is extreme shortage of dietitians in Pakistan, especially in rural areas and this shortage can be overcome by the use of technology as internet is available even in remote areas of Pakistan. The dietitians can also suggest patients and family members to join facebook page and share their stories and experiences to help other patients suffering from the same disease. They can also share recipes and these activities can reduce sense of isolation among patients. In this manner, nutritionist and dietitians in Pakistan can help transform scientific knowledge into practical information [4].

CONCLUSION

There is strong need of Multidisciplinary approach, which includes, doctors, dietitians, media and food industry to check for minor details when giving wheat/gluten free diet. In Pakistan, there are registered dietitians working in different hospital settings. There is a need to train health professionals especially doctors and nutritionists regarding updated knowledge and skills to follow these diets. Group education sessions can be conducted for parents and care givers, especially those who have family history of different allergies or celiac disease [4].

P.S. This section of my article was the continuation of my previous article which was on generalized food allergy. In the current article, I focused on the SECOND allergy from that article i.e. WHEAT ALLERGY and its signs, symptoms, treatment and nutritional interventions in detail.

Bibliography

1. Groups Support., *et al.* "Celiac Disease, Non-Celiac Gluten Sensitivity Or Wheat Allergy: What Is The Difference? - The Gluten Intolerance Group Of North America". The Gluten Intolerance Group Of North America (2018).
2. Kannall Erica. "Wheat-Free, Dairy-Free & Gluten-Free Breakfast Ideas". LIVESTRONG.COM (2018).
3. "Celiac Disease Screening And Diagnosis - Celiac Disease Foundation". Celiac Disease Foundation (2018).
4. Sumaira Nasim and Zainab Hussain. "Adherence To Gluten Free Diet In Pakistan-Role Of Dietitian". *International Journal of Advanced Engineering Research and Science* 4.9 (2018).
5. "Mary'S Nutrition Guidelines. Mary's Reality Based Nutrition". Realitybasednutrition.Com, (2018).
6. Roberta Altomare and Attilio Ignazio Lo Monte. "The Mediterranean Diet: A History Of Health". *Iranian Journal of Public Health* 42.5 (2018): 449-457.

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