

# Beyond Autoimmunity: Gluten Allergy in a Patient with Celiac Disease

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## Introduction

Wheat is an important source of macro- and micronutrients, fiber, and protein, but more and more people are following a gluten-free diet because its consumption can be associated with conditions such as celiac disease, wheat allergy, non-celiac gluten sensitivity, and irritable bowel syndrome, among others.

## Materials/Methods

We present a 29-year-old woman diagnosed with celiac disease at 9 months of age. During childhood and adolescence, she adhered

perfectly to a gluten-free diet without incident. However, in adulthood, she reported experiencing self-limiting episodes of oral itching after consuming gluten-free beer, which she subsequently eliminated from her diet without further repercussions.

Allergy testing was performed using prick tests against the most commonly used cereals: rice (1), oats (2), wheat (3), barley (4), corn (5), and rye (6), with a positive result for cereals containing gluten (wheat, barley, and rye) (Figure 1).



Figure 1:

The study was completed by determining total IgE 135, specific IgE to wheat 2.89, and specific IgE to gluten 2.35 ku/l. Therefore, a diagnosis of gluten allergy was made concomitant with celiac disease, and a strict gluten-free diet was recommended, even for foods that might contain a minimal proportion of this allergen. The patient has had a good outcome to date.

## Discussion

Wheat has been one of the most widely cultivated cereals in the world for thousands of years, but more and more people are choosing to follow a gluten-free diet [1]. This is because, in recent years, a negative image of this cereal has been fostered due to a significant number of articles suggesting that it may be responsible for overweight or obesity, poorer athletic performance, etc. However, the recommendation of a gluten-free diet should only be applied to those individuals in whom exposure to this protein and its absorption via the digestive system triggers well-defined immunological mechanisms that are ultimately responsible for the symptoms expressed by these individuals, as in the case described, who was diagnosed with celiac disease and gluten allergy.

Celiac disease is a chronic immune disorder mediated by autoantibodies against enterocytes of the small intestine in genetically predisposed individuals, in the context of a gluten-containing diet. Gluten allergy, on the other hand, is an IgE-mediated immune reaction to gluten, manifesting with immediate symptoms after ingestion, contact, or inhalation [2]. In both cases, the protein fraction of the gluten-containing cereal is responsible, through different immunological pathways, for the clinical expression of each disease. These are primarily storage proteins, or prolamins, which are amino acid sequences consisting of short, repeated peptide motifs resistant to enzymatic digestion. Examples include gliadins and glutenins (from wheat), secalins (from rye), hordeins (from barley), and avenins (from oats), although the latter are considered gluten-free.

The case presented demonstrates a coexistence of celiac disease and gluten allergy, which manifests with the consumption of gluten-free beer. The manufacturing process for gluten-free

beer uses exogenous enzymes during the germination stage to break down gluten and employs an additional filtration treatment to reduce its content in the final product [3]. According to current European regulations, this product must contain less than 20 ppm (parts per million) of gluten for its labeling to include the mention of "gluten-free" and for it to be suitable for consumption by celiac patients. However, this minimal concentration of the protein promotes the development of IgE-mediated reactions to gluten allergens, so the consumption of products labeled "gluten-free" may not be sufficient to allow consumption by those patients with a gluten hypersensitivity reaction.

## Conclusions

Wheat has recently received negative attention; however, avoiding its consumption without justification can lead to nutritional deficiencies, as wheat grains are high in certain vitamins and minerals, protein, and fiber. Furthermore, the use of gluten-free cereals reduces the quality of cereal-based products, including their elasticity and viscosity. Finally, they increase the cost of the average grocery bill by an estimated 159% compared to purchasing gluten-containing foods.

Therefore, it is essential to perform appropriate allergy tests on patients who express symptoms of adverse reaction related to gluten consumption, in order to achieve the precise diagnosis and treatment required by each individual.

## References

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