

Impact of gluten on human nutrition:

A comparative study between celiac, gluten-sensitive and non-celiac patients

GLOSSARY

CD, Celiac Disease; IgE, Immunoglobulin E; GFD, Gluten-Free Diet; NCGD, Non-Celiac Gluten Disease; WA, Wheat Allergy.

OBJECTIVES

- To offer information on the composition of gluten, along with its uses and properties.
- To provide key information on CD, NCGS and wheat allergy.
- To examine the similarities and differences among these three conditions.
- To gain insight into the pathogenesis of CD.
- To investigate the effects of gluten elimination on both celiac and healthy individuals.
- To investigate the reasons behind the growing trend of gluten elimination in individuals without gluten-related conditions.

Table 1. Main Differences Between CD, NCGS, and Wheat Allergy. [2]

	CD	NCGS	WHEAT ALLERGY
Description	Immune-mediated enteropathy	Non allergic, non-coeliac, immune reaction to gluten	Allergic, immune-mediated
Pathogenesis	Innate and adaptive immune response to gluten	Unclear, immune response	IgE-mediated response
Symptom Onset	Days to weeks	Hours to days	Minutes to hours
Symptomatology	Digestive and non-digestive		Typical allergy symptoms
Small bowel mucosal injury	Always	Occasionally	Never
Diagnosis	Serology Duodenal biopsy Genetic CD test GFD response	GFD and placebo/gluten challenge	Serology Skin prick testing
Treatment	Strict GFD	Limiting gluten in diet to tolerated amount	Wheat avoidance

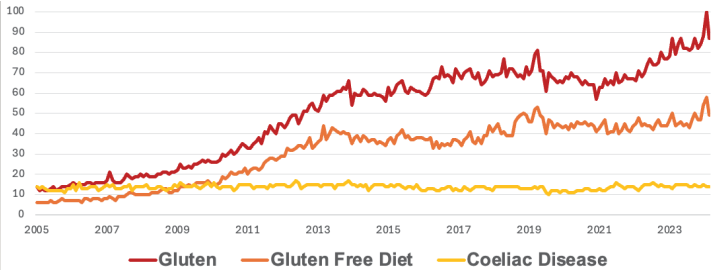


Figure 1: Number of global Google searches for the 3 selected terms in the last 10 years. [1]

POTENTIAL HARMS OF A GLUTEN-FREE DIET

Financial cost and accessibility

Social and Psychological Impact

Lower nutritional value [3]

Saturated fat and simple carbohydrates



Vitamins, minerals, fiber, proteins and complex carbohydrates

GUIDELINES FOR A HEALTHY GLUTEN-FREE DIET

Avoid gluten and...



LIMIT CONSUMPTION OF:

Sugar
Ultra-processed gluten-free products



INCREASE THE INTAKE OF:

Dietary Fiber
Micronutrients
Polyunsaturated Fatty Acid Intake
Naturally Gluten-Free Cereals

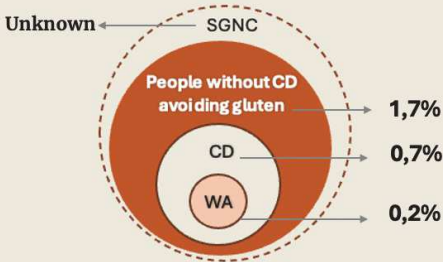


Figure 2: Representation of the prevalence of gluten-related disorders (Adapted from Jansson-Knodell et al., 2024)

CONCLUSIONS

- The composition and properties of gluten explain its versatility and widespread use in the food industry, as well as the challenge of producing high-quality gluten-free alternatives.
- The GFD is the only proven treatment for diagnosed CD, NCGS, or wheat allergy.
- There is a widespread misconception among some people regarding the harmful effects of gluten on individuals who are otherwise healthy.
- The pathogenesis of CD elucidates the inflammatory response triggered by gluten in the bodies of affected individuals.
- Maintaining a healthy GFD involves more than just eliminating gluten-containing foods.
- The claimed benefits of a GFD for healthy individuals are unsupported by scientific evidence, whereas the issues related to gluten elimination are well-documented.
- It is essential to promote the spread of accurate information regarding gluten elimination, ensuring that individuals who choose to follow a GFD are fully informed and can make evidence-based decisions.

REFERENCES

- [1] Google Trends. Google Trends. Retrieved on January 4, 2025, from <https://surl.li/kruosj>
- [2] Jansson-Knodell, C. L., & Rubio-Tapia, A. (2024). Gluten-related Disorders From Bench to Bedside. Clinical Gastroenterology and Hepatology, 22(4), 693–704. doi: 10.1016/j.cgh.2023.09.042
- [3] Niland, B., & Cash, B. D. (2018). Health Benefits and Adverse Effects of a Gluten-Free Diet in Non-Celiac Disease Patients. Gastroenterology & Hepatology, 14(2), 82–91.