



POSTER

GLUTEN MONITORING IN GLUTEN-FREE FOOD PRODUCTS: A FIVE-YEAR SURVEY FROM THE CRENARIA LABORATORY NETWORK (2021-2025)

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Celiac disease affects approximately 1% of the Italian population and is triggered by the ingestion of gluten in genetically predisposed individuals. Another gluten-related disorder is non-celiac gluten sensitivity, which is characterized by symptoms like those of celiac disease but is not associated with intestinal villous atrophy. To protect consumers, Reg (EU) No 1169/2011 requires cereals containing gluten to be clearly highlighted in the list of ingredients, while Reg (EU) No 828/2014 defines "gluten-free" products as those containing no more than 20 mg/kg of gluten. Enzyme-linked immunosorbent assays (ELISAs) are currently the most widely used methods for the determination of gluten in foods. This study presents an investigation of gluten occurrence in food products based on data collected by laboratories belonging to the CReNaRiA Network over the five-year period 2021-2025 in Italy.

Nine laboratories participated in the study: IIZZSS (n=6), ARPA (n=2) and ATS (n=1). The analyzed samples belonged to the following types: bakery and pastry, flours, pasta, sauces and condiments, ready-to-eat foods, meat products and preparations, cheeses and dairy products, infant foods, food supplements, fishery products and preparations, dietary foods for special purposes, jellies and broth preparation. Samples were also classified according to the reason for sampling (RS). All laboratories are accredited and performed the analyses by ELISA, with the Ridascreen® Gliadin kit (R-Biopharm).

During the period considered, the nine laboratories analyzed 10376 samples labeled as gluten-free. (2129 in 2021,

2059 in 2022, 1744 in 2023, 2061 in 2024 and 2383 in 2025). Most of the samples belonged to the food matrix "pasta" (41%); followed by "bakery and pastry products" (14%) and "food supplements" (10%). Regarding RS, samples were distributed as follows: 54% in "own-check", 24% in "activities for associations", 19% in "official control ordered by competent authorities or supervisory bodies" ("OC"), 4% in "research samples", 1% in "food-borne allergy outbreak", and 1% in "other". Overall, 0.93% of samples (97 in total) showed gluten levels above the legal limit: 80.4% concerned "own-check" samples, 11.3% "research samples", and 8.2% "OC" samples.

The collected data highlights that samples exceeding the legal gluten limits representing less than 1% (0.93%) of the total of over 10000 analyzed samples. However, temporal trend analysis shows a progressive and steady increase in the proportion of non-compliant samples, rising from 0.61% in 2021 to 1.30% in 2025. This increase was observed mainly in "own-check" RS samples, probably attributable to a growing awareness among producers in monitoring the supply chain, but also to issues related to cross-contamination at production sites. This survey reinforces the importance of: i) maintaining high levels of control throughout the agri-food supply chain, ii) harmonizing the analytical approach across the country through the use of validated methods to ensure data comparability, iii) implementing training activities for food business operators on allergen management, in order to ensure maximum safety for allergic consumers.

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