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STUDY OF THE IMPACT OF BIOTECHNOLOGICAL STRATEGIES ON THE TOXIC FRACTION OF GLUTEN

Celiac disease (MC) is caused by the improper reaction of T-helper lymphocytes in comparison with the gluten contained in the food consumed. Multiple studies, targeting the immune response to gluten, have been shown to be responsible for the adverse reaction to gluten is gliadin, the alcohol-soluble glycoprotein fraction of gluten.

4 fractions of prolamine were identified: α -, β -, γ - and ω . Form α is thought to contain the most active epitopes for the immune system and appears to be primarily responsible for toxicity in MC, nutritional therapy is the only unanimous treatment accepted by the medical community and consists of an absolutely strict gluten-free diet, which must be strictly followed for life. The aim of the paper is to analyze biotechnological strategies, in detoxifying the toxic fractions of gluten. To conduct this study, the literature on the PubMed and Crossref search engines was analyzed, using the Prisma flow chart. The results of the study show that an alternative approach to gluten detoxification is the digestion of wheat gluten peptides with bacterial-derived peptidases. Based on this hypothesis, some studies have been launched that have allowed the development of a biotechnology based on natural lactic acid bacteria in yeasts and fungal proteases, capable of causing complete degradation of gluten. Following analytical evaluations and preliminary in vitro and in vivo tests, experiments were performed, which demonstrated the absolute safety of food preparations based on wheat flour with completely degraded gluten.

New food fermentation technologies using bacterial-derived endopeptidases are promising strategies, and research on identifying new solutions to reduce gluten toxicity is ongoing.