عنوان مقاله:

Investigating the Effect of Cloned AN-PEP Enzyme in Yeast on Gluten Degradation and Rheological Features of Dough

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خلاصه مقاله:

Backgrounds: Celiac disease (CD) is a common autoimmune disorder caused by intolerance to gliadin protein found in wheat, rye, and barley, which is prevalent among ۱% of people in different parts of the world. Thus, in the last decades, the demand for gluten-free products has increased. The aim of the present study was to demonstrate the degradation of wheat gluten in laboratory. Materials & Methods: Yeast colonies obtained from cloning were assessed for the presence of Saccharomyces cerevisiae with protease activity and then inoculated onto MSM (mineral salts medium) with ۱% (w/v) gliadin. Aspergillus niger-derived prolyl endoprotease (AN- PEP) production was also qualitatively examined on gliadin agar plates by determining yeast colony growth. Zones of clarification of gliadin around yeast colonies were regarded as the evidence of glutenase activity of AN- PEP . The qualitative effects of aspergillopepsin expressed in bakery yeast were studied on yeast gliadin and the rheological properties of wheat flour dough. The rheological properties of the dough were investigated by a rheometer. Findings: In this survey, gluten was efficiently degraded into short fragments by the AN-PEP enzyme. The results of rheometer test showed that the use of AN-PEP could affect the rheological properties. The quality of dough and the ability of AN-PEP to degrade gluten in dough into smaller fragments were confirmed. Conclusion: The current study gives evidence that in the future, the development of novel gluten-free products with high quality and taste is possible by degrading gluten protein into non-toxic peptides using a variety of AN-PEP enzymes.

کلمات کلیدی:

AN-PEP, Enzyme, Gluten, Rheometer, Wheat flour