

Wheat gluten is a Pro-rich protein complex comprising glutenins and gliadins. Previous studies have reported that oral intake of enzymatic hydrolysates of gluten has beneficial effects, such as suppression of muscle injury and improvement of hepatitis. Here, we utilized ginger protease that preferentially cleaves peptide bonds with Pro at the P<sub>2</sub> position to produce a novel type of wheat gluten hydrolysate. Ginger protease efficiently hydrolyzed gluten, particularly under weak acidic conditions, to peptides with an average molecular weight of <600 Da. In addition, the gluten hydrolysate contained substantial amounts of tripeptides, including Gln-Pro-Gln, Gln-Pro-Gly, Gln-Pro-Phe, Leu-Pro-Gln, and Ser-Pro-Gln (e.g. 40.7 mg/g at pH 5.2). These gluten-derived tripeptides showed high inhibitory activity on dipeptidyl peptidase-IV with IC<sub>50</sub> values of 79.8, 70.9, 71.7, 56.7, and 78.9 μM, respectively, suggesting that the novel gluten hydrolysate prepared using ginger protease can be used as a functional food for patients with type 2 diabetes.

Production of DPP-IV inhibitory tripeptides from gluten using ginger protease.

