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Changes in the antioxidant properties of rice bran protein upon simulated gastrointestinal digestion

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The aim was to evaluate changes in the antioxidant properties of rice bran protein (RBP) following simulated gastrointestinal digestion. A two-stage *in vitro* digestion system (pepsin treatment followed by pancreatin treatment) was used for preparing GI-digested RBP. Antioxidant activities were evaluated using various oxidative systems: measurement of oxygen radical antioxidant capacity (ORAC), 2,2-diphenyl-1-picrylhydrazyl (DPPH), 2,2-azino-bis(3-ethylbenzothiazoline-6-sulphonic acid (ABTS+) assay, and reducing power assay. After gastrointestinal digestion, the protein solubility and free phenolic compounds increased from 24.6% to 94.5% and from 2.1 to 17.6 mg/g, respectively. The ORAC value of the GI-digested RBP was significantly higher than that of the intact RBP (473.5 vs. 44.2 μ mol Trolox equivalents/g); the GI-digested RBP also showed higher DPPH and ABTS radical-scavenging activities. This is the first study to quantify the antioxidant properties of GI-digested RBP in various oxidation systems. The results suggest that simulated gastrointestinal digestion could be used to produce bioactive components with increased antioxidant potential from RBP.

Biography

Seong-Jun Cho has completed his Ph.D from Korea University. He worked for Nestle R&D center in Switzerland and CJ R&D center in Republic of Korea. He has over 15 years experience in industry and has studied food protein & peptide and fermentation. He is an associate professor of department of food and biotechnology, Kangwon National university, Korea. He has published over 30 scientific papers and patents in food area.

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