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Characterisation of Antioxidant Peptides of Rice Bran Hydrolysates and A Comparative Metabolomic Investigation In Rice Bran Protein Hydrolysates Compared With Different Pulse Protein Hydrolysates

Abstract:

Antioxidant peptides were successfully identified from rice bran protein hydrolysate. The alcalase hydrolysate showed a higher degree of hydrolysis ($18.87 \pm 0.59\%$) than the trypsin

and pepsin hydrolysates, The hydrolysate from alcalase enzyme was then further separated by

ultra filtration membrane system, was further purified using reversed-phase UFLC and subjected to matrix assisted laser desorption/ionization time-of-flight/time-of-flight mass spectrometry (MALDI-TOF/TOF-MS) for sequential identification of the peptide. The sequence M.LPAAPGGWLYPAK.L and R.MIMGSTSGQSGDR.L + Oxidation (M) was identified as antioxidant peptide. Using an untargeted metabolomics approach, metabolite discriminations among rice bran protein hydrolysates sections were illustrated by Venn diagram, heatmap, PCA, o-PLSDA, correlation matrices, and S-plot. UHPLC-QTOF-IMS revealed 50 metabolites including terpenoids, lipids, sugars, and amino acids. This comprehensive metabolomic report brings new insights into metabolite distribution and its possible future implementations in food and nutraceuticals. The peptides produced by the partial hydrolysis has been evaluated for determining protein solubility, emulsion activity index, emulsion stability index, foam capacity and foam stability, DPPH assay, FRAP assay and ABTS Assay. Hydrolysates from rice bran behaves similar to lentil and soyabean hydrolysates. These improved functional properties of rice bran protein hydrolysates would make it use full for broad range of industrial food and pharmaceutical application.

Biography

Ajay Kumar, is a PhD student of the department of food science and technology, Guru Nanak Dev University, India. He is working under the guidance of eminent professor

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