



Abstract

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Enzymatic Hydrolysis of Oat Flour Protein Isolates to Enhance Antioxidative Properties

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Abstract:

Oat is an important cereal for human consumption and has relatively higher protein content compared to other cereals. Numerous studies have shown that oat polyphenols had antioxidant properties but no data is available for similar activity on proteins and peptides. The objective of this study was to investigate the antioxidant activities of tryptic and alcalase digests of oat flour protein isolates and ultra-filtered fractions. Oat flour protein hydrolysates from alcalase (APH) and trypsin (TPH) were therefore prepared and ultrafiltered using 2 and 10 kDa molecular cutoff membranes. The free radical scavenging properties were investigated by 2,2'-diphenyl-2-picrylhydrazyl (DPPH), oxygen radical absorbance capacity, linoleic acid emulsion system and ferrous ion-chelating assays. APH and TPH significantly reduced the generation of lipid hydroperoxides resulting from autoxidation of linoleic acid after 5 days incubation. At concentration of 200 :g/L, APH and TPH also showed better chelating properties than their ultrafiltered fractions (2 kDa, 2-10 kDa). On DPPH assay recorded after 15 min alcalase fraction less than 2 kDa possessed the greater inhibition activity (32.9%) compared to 26.4% for 2 kDa trypsin fraction. The results suggest that alcalase and tryptic digests of oat flour protein can be used to produce antioxidant peptides for potential use in food products.

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