

Title: Sunflower protein hydrolysates protects Caco-2 cells against oxidative damage and structural properties analysis

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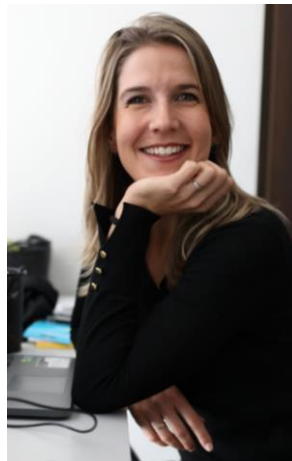
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Abstract:

Sunflower oil extraction generates a reach protein flower as a co-product, which may be used to the production of new sustainable and functional foods. Bioactive peptides can be formed by protein hydrolysis, but there is a lack of knowledge about sunflower peptide physiological and structural properties. The aim of this study was to evaluated antioxidant bioactivity of sunflower protein hydrolysates in Caco-2 gastrointestinal epithelial cells, the post digestion bioactivity and peptide structural properties. Low molecular fraction of sunflower peptide (SPHf) generated by alcalase hydrolysis was able to attenuate reactive oxygen species production and reverse the increase in GSH content and CAT activity induced by the stimulus with H₂O₂ in Caco-2 cells. Peptide bioactivity was maintained after digestion when analyzed by ORAC and ABTS assay. The 196 peptides identified were mainly originated from globulins, present an average of 12 amino acids and hydrophobic properties. In silico method for prediction of free radical scavenging showed 13 peptides with good ranking score for electron donation. The amino acid composition in terminal regions showed high incidence of hydrophobic and acidic amino acids. These structural characteristics may influence the ability of the compounds to act as electron donors for antioxidant bioactivity. This study provides new insights into the mechanism of action of sunflower peptides on enterocyte cells and important structural properties. These data support new physiological applications for sunflower products.

Biography:

Fabiana Galland is a researcher at the Institute of Food Technology (ITAL), São Paulo, Brazil. Professor of the master's postgraduate program in Food Science and Technology at ITAL. Participates in the Editorial Board of Foods and Brazilian Journal of Food Technology. She is PhD in biochemistry, with expertise in Food Science and Technology. Her research interest is in agroindustry byproduct, protein and peptide hydrolysis and sequencing, digestion process, physic-chemical characterization, bioactivity evaluation in cell culture and in silico analysis. Extensive experience in planning and coordinating scientific projects, guidance, teaching and laboratory activities.



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