



Protein extraction of the sunflower grains and bran

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Sunflower grains have a high protein content (24%) with high quality amino acid profile and are used to extraction of vegetable oil. The sunflower brain is produced during the processing of vegetal oil. The sunflower grains and by-product (bran) can be used with raw materials for obtaining peptides with bioactivity for protein hydrolysis after extraction, since they have great amount of essential amino acids, typically nonpolar, soluble and insoluble alcoholic solutions in water. The aim of this work was to evaluate protein extraction (three methods) of sunflower grains and bran. The proximal composition was evaluated (moisture, protein, lipids and ash contents) in the sunflower grain and sunflower bran. Furthermore, the soluble protein was measured after the three extracts methods. The sunflower grains and bran were ground, homogenized (60 mesh) and stored at 5°C until analysis. The sunflower grains were degreased by hot-extraction (Soxhlet method) and cold-extraction (Bligh & Dyer method). The sunflower grain degreased for Soxhlet method (SS) and Bligh & Dyer method (SDB) and sunflower bran (SB) obtained from industry were subjected to protein extraction. The protein extraction solvents or agents utilized were: 1) dichloromethane/methanol (solvent proportion 1:1, 25°C, 1 h); 2) water/ ethanol/heat treatment (solvent proportion 2:3, 100°C, 1 h); and, 3) alkaline extraction and precipitation (NaOH 0.2 M, 35°C, 1 h). The sunflower grain and sunflower bran presented protein 15.12% and 27.80%, lipids 57.70% and 2.32%, moisture 1.08% and 7.38%, ash 2.44% and 5%, carbohydrates 23.64% and 57.47%, totalizing caloric value of 674.4 Kcal g⁻¹ and 362.0 Kcal g⁻¹, respectively. The results found to protein extraction methods were: extraction 1: 124.04 µg g⁻¹ (SS); 80.69 µg g⁻¹ (SDB); 94.22 µg g⁻¹ (SB); extraction 2: 797.96 µg g⁻¹ (SS); 297.67 µg g⁻¹ (SDB); 1360.59 µg g⁻¹ (SB); and extraction 3: 130.59 µg g⁻¹ (SS); 0.77 µg g⁻¹ (SDB); 50.71 µg g⁻¹ (SB). The largest amount of protein was attributed to method 2 for samples SS, SDB and SB. It was possible to identify the most effective method with regard to protein extraction.

Keywords: proximal composition, bioactive peptides, *Helianthus annuus* L.

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