

**DETERMINATION OF POLYPHENOLIC CONTENT IN BY-PRODUCT
FROM SUNFLOWER SEED INDUSTRY**

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Abstract

The production of sunflower oil yields a considerable amount of by-product such as sunflower seed cake which remains after isolation of oil from sunflower seeds. Sunflower seed cake is usually used to produce animal feed and fertilizer of low quality, as well biomass for energy generation and partially ends up as waste. Due to the huge amount of this by-product released every year from sunflower oil industry as a waste, if it is valorised properly, it can be very beneficial from both economic and environmental aspects. Polyphenols are secondary metabolites of plants with a high antioxidant power. Chemically they are compounds that have more than one hydroxyl groups attached to one or more benzene rings [1]. Polyphenols are not clarified as human nutrients, but they have many beneficial effects on human health and, therefore, are called nutraceuticals [2]. In recent years polyphenols rich products are suggested as preventing and treating agents in specific diseases.

In this study, sunflower seed cake samples from non-oil type of sunflower (n=20) were analysed in order to assess the content of polyphenols. Ultrasound extraction at 30 °C (t=10 min) was used as extraction technique while 80% ethanol was applied as extraction solvent. Thereafter, the ethanol was removed and dry residue was dissolved in methanol. In the obtained extracts, total phenols were estimated according to Folin-Ciocalteu (FC) assay [3] and results are expressed as mg chlorogenic acid/100 g on dry matter basis (d.m.). By FC method, total phenols content can be determined. However, since most of food phenolics have more than one hydroxyl group, food phenolics are also called polyphenols, thus, polyphenols content can be approximately assessed by FC method. From obtained results it is evident that sunflower seed cakes contained significant amount of biologically highly valuable polyphenols. The total polyphenolic content was found to be in the range from 536 to 732 mg of chlorogenic acid/100 g d.m. in sunflower seed cakes. The results proved that this by-product is an interesting source of antioxidant compounds that may be recovered and used for the development of functional ingredients in food products.

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References

- [1] W. Vermerris, R. Nicholson, Phenolic compound biochemistry, Springer, West Lafayette, IN, 2006, pp. 2.
- [2] A.P. Gollucke, R.C. Peres, A.Jr. Odair, D.A. Ribeiro, Recent Pat. Food Nutr. Agric. 5 (2013) 214.
- [3] M. Kosar, H.J.D. Dorman, R. Hiltunen, Food. Chem. 91 (2005) 525.