



جامعة الفيوم
كلية الزراعة
قسم علوم وتكنولوجيا الأغذية



PHENOLICS EXTRACTED FROM POTATO, SUGAR BEET, AND SESAME PROCESSING BY-PRODUCTS (2013)

International Journal of Food Properties 16:1148–1168.

Adel Abdelrazek A. Mohdaly^{1,2}, Mohamed Fawzy Ramadan Hassanien^{1,3}, Awad Mahmoud², Mohamed Atef Sarhan², and Iryna Smetanska¹

1- Institute of Food Technology and Food Chemistry, Methods of Food Biotechnology Department, Technical University of Berlin, Berlin, Germany.

2- Food Science and Technology, Faculty of Agriculture, Fayoum University, Egypt.

3- Agric., Biochemistry Dep.t, Fac., of Agric., Zagazig University, Zagazig, Egypt.

Article No.:

منشور (مستخرج من رسالة)

Impact Factor: 0.906

Abstract

The food-processing industry generates substantial quantities of phenolic-rich by-products that could be valuable natural sources of antioxidants. In this study, the antioxidant properties and total phenolic and flavonoid contents of three industrial by-products (potato peels, sugar beet pulp, and sesame cake) extracted with different solvents were evaluated. Methanol exhibited the highest extraction ability for phenolic compounds, with total phenolics amounting to 2.91, 1.79, and 0.81 mg gallic acid equivalent g⁻¹ dry weight in potato peels, sugar beet pulp, and sesame cake extracts, respectively. Methanolic extracts showed the strongest antioxidant capacity in the two performed assays. The bioactive components extracted with ethanol were further examined for their antioxidant activity in comparison with synthetic antioxidants under accelerated oxidation conditions using sunflower oil as oxidation substrates for 72 h at 70°C. Inverse relationships were noted between peroxide values and oxidative stabilities and also between secondary oxidation products, measured by p-anisidine value and stabilities at termination of the storage. The high performance liquid chromatography analysis of potato peels, sugar beet pulp, and sesame cake extracts revealed the presence of phenolic compounds. On the basis of the obtained results, potato peels, sugar beet pulp, and sesame cake extracts could serve as natural antioxidants and might be explored to prevent oxidation of vegetable oils. Therefore, they could be used as preservative ingredients in the food and/or pharmaceutical industries.