PHARMACOGNOSTICAL AND BIOLOGICAL STUDY OF SPINACH FRUITS

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Abstract

The fruit of Spinach (Spinacea oleracea L.) was analyzed for its lipoidal, carbohydrate, protein, vitamin and mineral contents, and its biological activities evaluated. The physico-chemical characters of the extracted fixed oil (6.5%) were determined. GLC analysis of the saponifiable fraction of the oil revealed that omega-6 (linoleic acid 20.739%) and omega-9 (oleic acid 33.417%) were the major unsaturated fatty acids; while palmitic (36.258%) and stearic (3.101%) acids were the major saturated ones. In addition, spinasterol, stigmasterol, campesterol, β-sitosterol and α-amyrin, as well as, a series of hydrocarbons were identified in the unsaponifiable fraction. Investigation of the free sugar content and the polysaccharide hydrolysate was carried out by HPLC analysis. Five free sugars were detected and identified as: glucose, sucrose, galactose, fructose and galacturonic acid. The polysaccharide hydrolysate afforded four sugars: galactose, glucose, fructose and galacturonic acid. The amount of crude protein was 17.64 g/100 g; total amino acids amounted to 10.8424 g/100g, among which were 3.3244 g/100 g essential amino acids. Vitamins C, B1, B2, B6, A, D, and E reached 3650 ppm, 236.9 ppm, 38.916 ppm, 5051.3 ppm, 38.272 ppm, 64.543 ppm, and 33.484 ppm respectively. The major minerals were K 686.2 mg/100 g, Mg 206.6 mg/100 g, Fe 69.9 mg/100 g, Mn 6.2 mg/100 g, Zn 2.8 mg/100 g, and, B 1.8 mg/100 g, Cu 1.1 mg/100 g, Cr 0.5 mg/100 g and Co 0.1 mg/ 100 g. The effect of the different fruit extracts, fixed oil and polysaccharide on blood glutathione level was used as a measure to assess its antioxidant activity. The effects of the same fruit extracts on carbon tetrachloride toxicated liver rats were investigated.

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