

Chemical characterization of *Portulaca oleracea* L. and evaluation of antioxidant activity

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Portulaca oleracea L. is a warm-climate, herbaceous succulent annual plant, belonging to the Portulacaceae family. It is commonly known as purslane and is distributed worldwide. Purslane is drawing increased interest to the cosmetic industry due to the high amounts of omega-3 fatty acids and cyclo-dopa alkaloids isolated from this plant, known as “oleraceins”. Furthermore, it contains a variety of secondary metabolites such as flavonoids, terpenoids, polysaccharides, vitamins, sterols, proteins, and minerals.^[1] The aim of this study was to investigate the phytochemical composition of the 70% (aq) methanol extract of *Portulaca oleracea* L., the plant's content in fatty acids, and evaluate its antioxidant activities. Plant samples were collected from the region of Patras, Greece. The first step was the separation of stems and leaves, and the samples were cut into small pieces to facilitate drying. Plant samples were divided into two groups and dried using two different drying methods, namely vacuum drying and oven drying (50 °C). The dried samples were ground, and ultrasound-assisted extraction was conducted in the presence of n-hexane followed by 70% (aq) methanol. The hydroalcoholic extracts were analyzed with ultra-high performance liquid chromatography–diode array detector–tandem mass spectrometry (UPLC-DAD-MS), providing data mainly for the alkaloids, a major class of chemicals of the plant. A direct transesterification method was used for the analysis of fatty acids. The identification was carried out using GC-FID (Gas Chromatography - Flame Ionization Detector) at the fatty acid methyl esters extracts of the leaves and stems from the two drying methods. The results indicate a rich content of fatty acids, mainly in the leaves, and the presence of two major omega-3 fatty acids, namely, α-linolenic acid and linoleic acid. Overall, the antioxidant activity was measured using DPPH and FRAP assays at the dry hydroalcoholic extracts of the aerial parts of *P. oleracea* L., proving the higher antioxidant activity of the leaves in comparison with the stems. The results suggest that purslane provides protection against free radicals and its antioxidant potential is highly linked to the high amounts of phenolic alkaloids and omega-3 fatty acids.^[2]

1. Zhou, Y. X., Xin, H. L., Rahman, K., Wang, S. J., Peng, C., & Zhang, H. (2015). *BioMed research international*, 2015. Article ID 925631.
2. Yang, Z., Liu, C., Xiang, L., & Zheng, Y. (2009). *Phytotherapy Research*, 23(7), 1032-1035.