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O Presidente da República

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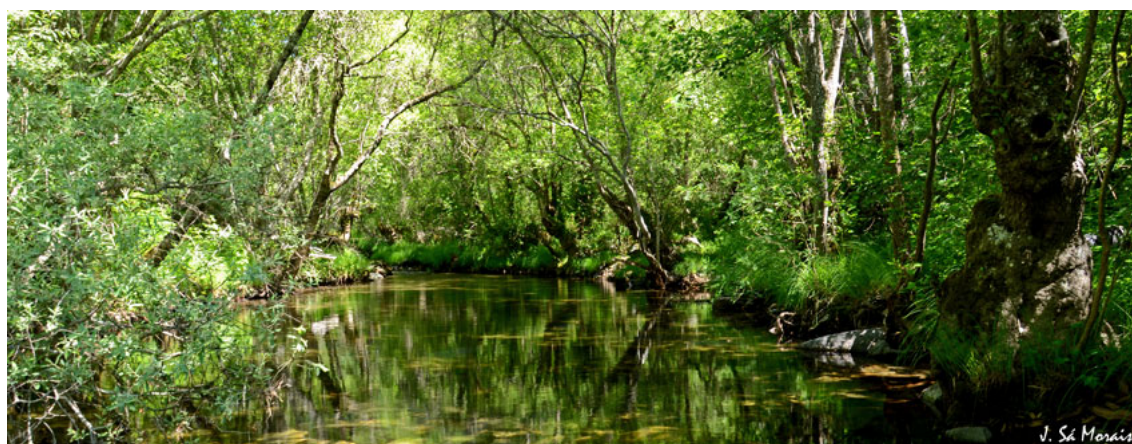
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Chemical characterization of *Opuntia* sp. by-products

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The species from the Cactaceae family are important invaders in the Mediterranean. The seeds are usually discarded and proper utilisation of these waste products could lead to an important source of bioactive compounds. The seeds have been described to be rich in health-promoting polyunsaturated fatty acids and may potentially be included in animal and human diets [1]. Moreover, seeds could also be recovered for their high nutritional value, as sources of sugars, tocopherols, dietary fiber and polyphenols instead of being discarded, as it currently occurs.

In this study, the composition in soluble sugars, fatty acids, organic acids, tocopherols and phenolic composition were determined in seeds of *Opuntia macrorhiza* (Engelm.) and *Opuntia microdasys* (Lehm.). The individual sugars profile was determined by HPLC-RI, fatty acids by GC-FID, organic acids by HPLC-DAD, tocopherols by HPLC-fluorescence and phenolic compounds by HPLC-DAD-ESI/MS.

In both cases, the overall concentrations of soluble sugars in seeds were quite lower than those detected in other *Opuntia* sp. parts. Quinic (0.30 g/100 g dw) and oxalic (0.32 g/100 g dw) acids were the major organic acids detected in *O. microdasys* and *O. macrorhiza*, respectively. The fatty acid profiles detected in the seeds of both species were similar, with linoleic acid (C18:2n6) as the major fatty acid (71% in *O. microdasys*; 74% in *O. macrorhiza*). γ -Tocopherol was the most abundant tocopherol vitamer in both species (7.4 mg/100 g dw in *O. microdasys*; 5.8 mg/100 g dw in *O. macrorhiza*). Regarding the phenolic profile, eight compounds were identified: seven phenolic acid derivatives and one flavonoid, and *O. macrorhiza* seeds (1016 μ g/g extract) revealed a higher concentration than *O. microdasys* (450 μ g/g extract). Feruloyl di-hexoside was the most abundant phenolic acid in both species (225 μ g/g extract in *O. microdasys* and 718 μ g/g extract in *O. macrorhiza*).

The seeds of *Opuntia* sp. presented several bioactive phytochemicals, which may allow considering this botanical part as highly interesting by-products.

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