

COMPARATIVE STUDY BETWEEN SEEDS OF SPINE AND SPINELESS *OPUNTIA FICUS-INDICA*

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Seeds of spine and spineless *Opuntia ficus-indica* varieties were investigated. This comparative study aimed to find out if the presence or the absence of spines could have an effect on the seeds composition. Morphological and physical characteristics of the fruits were first registered. Seeds of each variety were separated, dried and reduced to powder. This powder was subjected to oil and phenolic extractions. Determination and characterization of fatty acids and phenolic compounds were realized using, respectively, gas chromatography and liquid chromatography coupled to mass spectrometry and to nuclear magnetic resonance approaches. In addition, an evaluation of the antioxidant and the antiradical activities of the phenolic extracts was investigated. The statistical analysis of the obtained data revealed significant differences. Indeed, higher oil rate was obtained in the spineless variety and gas chromatography analysis of the seed oils showed high percentages of total unsaturated fatty acids, particularly linoleic acid up to 63%. The highest level of total unsaturated fatty acids was also found in the spineless variety, contrarily to the total saturated fatty acids level. The phenolic profile of the seeds of both varieties displayed a high complexity, with more than 20 compounds detected at 330 nm. However, the phenolic compounds amounts were much higher in the spine variety as well as the antioxidant and the antiradical activities. The data indicated that seeds of both varieties contain various components that constitute a source for natural substances. The spineless variety presents a good source of oil while the spine one contains more antioxidants.

Keywords: *Opuntia ficus-indica*, varieties, physicochemical properties, antioxidants, antioxidant activity

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