



Comparison of chemical composition and biological activities of Algerian seed oils of *Pistacia lentiscus* L., *Opuntia ficus indica* (L.) mill. and *Argania spinosa* L. Skeels

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ABSTRACT

Many parameters can influence the chemical profiles and the biological activities of seed oils. It was therefore of interest to study Algerian seed oils, whose characteristics are not well known. So, the physicochemical properties and nutrient profiles (fatty acids, phytosterols, polyphenols) of seed oils from *Pistacia lentiscus* L. (PL), *Opuntia ficus-indica* (L.) mill. (OFI), and *Argania spinosa* L. Skeels (AS) were determined. The antioxidant and antimicrobial activities of the oils were also characterized. The physicochemical parameters of the oils are closely related to the standard values. PL oil is distinguished by its high content of pigments. AS and OFI oils were dominated by linoleic acid, at 39.1 ± 0.5 and $55.8 \pm 0.6\%$, respectively, while the oleic acid ($41.2 \pm 0.4\%$) was the major fatty acid in the oil of PL. The analysis of phytosterol levels showed that β -sitosterol was present in high amounts in the three oils, of 387.44 ± 3.04 , 87.92 ± 0.72 and 58.79 ± 1.19 mg/100 g of oil in OFI, AS and PL oils, respectively. The characterization of phenolics revealed only the presence of protocatechuic acid in the PL oil and *p*-coumaric and *t*-cinnamic acids in AS oil. The antioxidant activity was evaluated by using the phosphomolybdate assay and the scavenger activity of the DPPH[•] radical. PL and OFI oils showed the highest antioxidant capacity compared with AS. Very weak antibacterial and antifungal effects, evaluated against four bacterial and six fungal strains, were found. Given the chemical characteristics and antioxidant properties of Algerian PL, OFI and AS seed oils, our results highlight the potential benefit of these oils for human health.

1. Introduction

Vegetable oils are essential components of our daily diet. They provide energy; are rich in nutrients such as essential fatty acids, phytosterols, pigments and phenolic compounds; and can serve as a carrier of fat soluble vitamins (Zahir et al., 2017). These oils are used in food and cosmetic industries in various products (margarines,

chocolate, cooking oils, soaps, lotions) (El Hachimi et al., 2015; Trabelsi et al., 2012).

Pistacia lentiscus L. (Lentisk) (Anacardiaceae) grows wild in Algeria and is largely distributed in "extreme" ecosystems of the Mediterranean basin (Yildirim, 2012). It has a large geographical and bioclimatical distribution, extending from the humid to the arid areas. It can be regarded as an oleaginous plant with a high oil yield estimated at around

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