

Phytochemical properties, antibacterial and anti-free radical activities of the phenolic extracts of *Retama raetam* (Forssk) Webb. & Berthel. collected from Algeria Desert

Atef CHOUIKH^{*1, 2} and Fatma ALIA^{1, 2}

¹Biology Department, Faculty of Natural Science and Life, El Oued University, El Oued, Algeria

²Laboratory Biology, Environment and Health (LBEH), El Oued University, El Oued, Algeria

Abstract. This study aimed to evaluate the phytochemical properties, antibacterial and anti free-radical activities of *Retama raetam* extracts which is growing in the South-East of the Algeria Desert. The chemical screening showed the presence of many secondary metabolites such as tannins catechin, sterols and terpenes, and the absence of gallic tannins compounds. The obtained results demonstrated that the methanolic extract has shown moderate total phenolic and flavonoids contents (31.59 ± 2.82 mg AG E/g extract and 14.35 ± 1.02 mg Qu E/g extract respectively). In the free radical DPPH test, the values of IC_{50} were converging in all extracts of *R. raetam*. The antibacterial activity of extracts has been tested against ten bacterial strains, were registered as the best inhibition zones with *Vibrio cholera*, *Micrococcus luteus* and *Serratia marcescens*. *Pseudomonas aeruginosa* ATCC 27853 and *Staphylococcus aureus* ATCC 25923 strains showed high resistance against most of all concentrations of extracts, and we noted the Gram-negative bacteria strains are the most sensitive to the different extracts of the plant. The qualitative analysis of extracts by using HPLC showed the contrast in presence of the phenolic compounds, such as in ethyl acetate extract registered absence of chlorogenic acid, also the absence of caffeic acid in 1-butanol extract. These results confirmed of the phenolic extracts of this plant are a source natural alternative to antibiotics and antioxidants.

Keywords: *Retama raetam*; anti-free radical activity; antibacterial activity; HPLC.

* Corresponding author. E-mail addresses: atef-chouikh@univ-eloued.dz; atchouikh@yahoo.fr (A. Chouikh)