

## Phytochemical, antioxidant and antibacterial preliminary screening of a traditional Algerian medicinal plant, *Cornulaca monacantha* Del.

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Nowadays, the growth of multi-resistant bacterial strains has become an increasing issue, underlining the need for new and effective antimicrobial drugs, to be discovered and developed. In this regard, studying wild flora is an approach that has promise for developing medicines. This study aims to investigate the antioxidant and antibacterial potentials, phytochemical composition, of *Cornulaca monacantha* Del. growing in the northern Algerian Sahara. Plant aerial parts were initially subjected to extraction, and the resultant extracts were then evaluated for their phytochemical profiles (such as total contents of phenolic, and flavonoid), and antioxidant potentials using the DPPH assay. In addition, antibacterial activities were assessed *in vitro* using a panel of fourteen human pathogenic microorganisms including (MDR) multi-drug resistant strains. Results indicated the presence of flavonoids, saponins, tannins, sterols and triterpenes, reducing sugar and coumarins. The Plant aerial parts were higher in total flavonoid and phenolic contents. Moreover, an important antioxidant activity compared to the ascorbic acid was recorded ( $IC_{50} = 0.62 \pm 0.02$  mg/ml and  $0.3 \pm 0.02$  mg/ml for *Cornulaca monacantha* Del. and ascorbic acid, respectively). Furthermore, the extract showed antibacterial activity against tested Gram-negative and Gram-positive bacteria with significant inhibition effect against *C. koseri*, *P. aeruginosa* IMPR, *S. aureus* ATCC 43300, and *S. aureus* (MRSA) and *S. epidermidis* with MIC 3.75 mg/ml. This study revealed the high richness in phenolic compounds with important antioxidant and antibacterial activities of *Cornulaca monacantha* Del. that suggests its potential as an effective antimicrobial drug.

**Keywords:** Antioxidant activity; antibacterial activity; total phenolic content; total flavonoids; *Cornulaca monacantha*; Medicinal plant.