

Abstract

Our study is interested in the investigation of the chemical composition and the biological activities of the aerial parts of three Algerian species: *Retama sphaerocarpa* L. of the Fabaceae family, *Lepidium draba* L. of the Brassicaceae family and *Cedrus atlantica* of the Pinaceae family.

Phytochemical investigation of *R.sphaerocarpa* led to the characterization of 17 compounds. Structural determination was performed by the combination of spectroscopic analysis techniques: NMR (¹³C, ¹H, COSY, HSQC and HMBC), mass spectrometry (TOF / MS) and UV spectroscopy.

The study of chemical composition of *L.draba* is carried out using the HPLC-TOF / MS technique. The result revealed the presence of 12 phenolic acids and 6 flavonoids.

The GC / GC/ MS analysis of the essential oils of *C. atlantica* allowed to identify 88 compounds representing 74.11% of total essential oil of the branches / needles and 37 constituents representing 99.33% of total essential oil of the cones. An important difference is noted between the results of this analysis and those obtained previously.

Quantification of total polyphenols and total flavonoids in extracts of *R.sphaerocarpa* was performed by colorimetric methods. This step showed a content of polyphenols and flavonoids more important in the AcOEt extract.

Three methods were used to evaluate the antioxidant activity of this species: DPPH assay, ABTS assay and CUPRAC assay. This plant showed moderate activity compared to the standards used. The two compounds genistein and isopruneitin showed significant antioxidant activity.

The extracts of *L. draba* were evaluated for their antioxidant activities using five complementary methods: DPPH, ABTS, CUPRAC, metal chelating and FRAP assays. The three extracts of this plant have recorded a moderate antioxidant activity compared to the standards used.

In addition, the essential oils of *C. atlantica* showed powerful antioxidant activity in the two tests carried out: DPPH and hydroxyl radical scavenging assays.

Key words: *Retama sphaerocarpa* (L.) Boiss, *Lepidium draba* (L.), *Cedrus atlantica*, antioxidant activity, chromatographic methods, NMR, HPLC-TOF / MS, GC / GC/ MS.