

PHYTOCHEMICAL SCREENING AND *IN VITRO* EVALUATION ANTIMICROBIAL, ANTIOXIDANT CAPACITIES OF A STEPPE MEDICINAL PLANT OF CENTAUREA GROWING IN DJELFA (ALGERIA), BIBLIOGRAPHIC STUDY ON EVALUATION OF THE NUTRITIONAL AND BIOACTIVE POTENTIAL

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Abstract

Introduction & Objectives:

Medicinal plants are considered as a rich source of bioactive compounds, among drugs of natural origin, special place belongs to polyphenol and flavonoid, known as strong antioxidant and also antimicrobial anagents. In order to enhance the value of Algerian flora, we are interested in a species *Centaurea* of the Asteraceae family. Ethnomedical literature research has shown that species of this genus are widely used in folk medicine, particularly in Algeria, for their richness, represented by 45 species, of which 7 species are distributed in the Sahara [1, 2].

Several species belonging to this genus are exploited in traditional medicine such as antidiabetics, anti-rheumatic, cytotoxic and antioxidant [3]. Study evaluation of the nutritional and bioactive potential of flowers of *C.cyanus*. Water was the main constituent (> 76%, fresh weight). Concerning vitamin E, α -tocopherol was the major vitamer. Carotenoids value 5.8 mg β -carotene/100 g dry weight, being particularly rich in lutein. Succinic acid was the major organic acid. Fructose, glucose and sucrose were detected in this flowers. These results can contribute to the knowleiteir popularity among consumers and in the food industry [4].

C. pullata is used in the preparation of a local traditional dish called “El Hammama”[5].

The present study aimed at conducting the preliminary phytochemical screening; quantitative determination of total phenolic and total flavonoid contents (TPC and TFC, respectively) and the evaluation *in vitro* of antioxidant capacity using different tests and antimicrobial activity of 03 derived extracts chloroforme (CHCl₃), ethyl acetate (EtOAc) and *n*-butanol (*n*-BuOH).

Methodology (Material and methods):

After collection of the selected plant material in a region of Djelfa, this study began with maceration of the aerial parts in a Hydro-methanolic solution (80%). The extract obtained after concentration is diluted with distilled water and then successively exhausted with various with solvents with increasing polarities (petroleum ether, chloroform, ethyl acetate and *n*-butanol).

All extracts were subjected to a phytochemical screening by precipitation and coloration reaction; quantitative estimation of TFC and TPC by the appropriate colorimetric methods.



The direct antimicrobial test was determined using the paper-disk diffusion method. The *in vitro* antioxidant evaluation was carried out on the three extracts; (by different tests, DPPH...) were determined using microdilution methods by 96-wells plates.

Results and Discussion:

- The preliminary phytochemical screening showed that our extracts contain various types of secondary metabolites and in varying amounts such as flavonoids, terpenoids, sterols, tannins, saponosides, alkaloids and anthraquinones.
- The *n*-BuOH extract was the most concentrated in total phenolic and the ethyl acetate extract was the most concentrated in total flavonoid.
- The evaluation of antioxidant efficacy also showed that ethyl acetate extract was optimal in inhibiting free radical by DPPH[•] and ABTS method followed by chloroform and *n*-butanol extracts. This extract showed also a moderate antimicrobial activity.

Conclusion:

There is a very strong antioxidant activity ($A_{0.50} = 11.59 \pm 2.25 \mu\text{g} / \text{ml}$ by the ABTS method), a moderate antibacterial activity against the *Escherichia coli* BSLE strain, however low antifungal activity is detected in all extracts.

Keywords: *Centaurea*, TPC, TFC, *in vitro*, antioxidant activity, antimicrobial activity.

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