

Phyto-chemical profile of *Taraxaci folium* extract

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Abstract

In this study was analyzed *Taraxaci folium* ethanolic extract. *Traxacum officinale* L. has many pharmacological actions that have already been studied: antibacterial, antioxidant and antiinflammatory. The purpose of this study is to analyse the plant extract that will be incorporated in different pharmaceutical forms for the treatment of some dermatological diseases. The chemical analysis of the extract was performed by high performance liquid chromatography and mass spectrometry. The antioxidant character of plant extract was studied by four methods: DPPH assay, Cuprac assay, total polyphenols content and total flavonoid content. The major bioactive compounds identified were: syringic acid, protocatechuic acid, chlorogenic acid, caftaric acid, p-coumaric acid, rutoside, luteolin, hispidulin, ergosterol, sigma-sterol, beta-sitosterol, campesterol, alpha-tocopherol and gamma-tocopherol.

Introduction

Taraxacum officinale L., called dandelion in everyday language, has many pharmacological actions that have already been studied, like antibacterial, antioxidant and antiinflammatory.

In this study, the extract obtained from *Taraxaci folium* was chemically analyzed. The determination of the total content of flavonoids, polyphenols and the determination of the antioxidant capacity was performed on the 10% concentration extract.

The objective of this study was to determine the optimal concentration of the mixtures so that they can be incorporated into topical hydrogels.

Materials and methods

Taraxaci folium (T) was used as vegetable product. The vegetal material was harvested from the spontaneous flora of Bihor Country. All reagents used were of analytical purity.

Preparation of plant extract

Extract of 10% concentration were obtained from the dried vegetable product by maceration with 70% ethyl alcohol. The vegetable product was left to soak for 10 days, then filtered through a double layer of gauze. After 5 days the extract was decanted and kept at 8°C.

Identification and quantification of phytosterols, polyphenols, methoxylated flavones and tocopherols

For the analysis of sterols, polyphenols, methoxylated flavonic aglycons and tocopherols from plant extract, high performance liquid chromatography coupled with mass spectrometry (HPLC/MS) was used.

The results were expressed as µg polyphenol per mL extract, µg phytosterol per mL extract, ng methoxylated flavones per mL extract and ng tocopherol per mL extract. [1,2]

Total flavonoid content (TFC)

A spectrophotometric method based on the formation of the aluminium chloride complex was performed to assess total flavonoid content. Results were expressed as mg quercetin equivalents (QE) per mL extract.

Total polyphenolic content (TPC)

Polyphenolic content was determined by the Folin – Ciocâlțeu method and was expressed as mg gallic equivalents (GAE) per 100 g DW.

Antioxidant capacity

DPPH assay

Evaluation of antioxidant capacity *in vitro* was performed by the DPPH technique, using 1,1-diphenyl-2-picrylhydrazyl reagent. The inhibition percentage was calculated using the following equation:

$$\% = [(Abs. blank - Abs. sample) \times 100] / Abs. Blank [3]$$

CUPRAC assay

The antioxidant capacity of the extracts against cupric ions Cu²⁺ was determined by the Cuprac method. The results were expressed as µmol Trolox per 100 µL extract. [4]

Results

Table 1. The amount of phytosterols in *Taraxaci folium* (T) extract.

ng/mL	Ergosterol	Sigmasterol	beta-Sitosterol	Campesterol
T	263,00	40613,00	42223,00	2358,00

Table 2. The amount of tocopherols in *Taraxaci folium* (T) extract.

ng/mL	alpha-tocopherol	gamma-tocopherol	delta-tocopherol
T	91,20	18,10	0

Table 3. The amount of polyphenols in *Taraxaci folium* (T) extract.

µg/mL	Syringic acid	Protocatechuic acid	Vanillic acid	Chlorogenic acid	p-coumaric acid	Ferulic acid	Rutoside	Quercetol	Quercitrin
T	0,10	0,40	0	54,10	0,40	0	0,80	0	0

Table 4. The amount of methoxylated flavones in *Taraxaci folium* (T) extract.

ng/mL	Hispidulin
T	108,10

Table 5. The amount of total flavonoids and total polyphenols in *Taraxaci folium* (T) extract.

	TFC mg QE/ml extract	TPC mg GAE/ 100g DW
T	1,27	99,50

Table 6. The antioxidant capacity of *Taraxaci folium* (T) extract.

	DPPH Inhibition %	Cuprac µmol Trolox/100µL extract
T	76,07	4,20

Conclusion

Taraxaci folium extract is rich in sterols, the highest concentration being beta-sitosterol. Among the identified tocopherols, alpha-tocopherol is found in a larger amount. Among the identified polyphenols, chlorogenic acid is found in considerable quantity in the studied extract.

Following the evaluation of the antioxidant activity, the values obtained show that the extract have good antiradical effects. The values obtained suggest that *Taraxaci folium* extract may be incorporated into the composition of pharmaceutical forms with pharmacological effect.

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