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The antioxidant capacity and total phenol contents of leave and roots of *Taraxacum officinale*

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Abstract

Antioxidant capacity values of lea and roots were determined as 14.67 and 20.58 %, respectively. In addition, total phenol contents of the leaf and roots of Taraxacum officinale were established as 2.019 and 1.997 mg GAE/L extract, respectively. The results from the present study suggest that caper buds and leaves can be used as a source of fragrance compounds and as medicinal plants.

Keywords: *Taraxacum officinale*, leaves, root, total phenol, antioxidant

1. Introduction

Taraxacum officinale, the common dandelion (often simply called "dandelion"), is a herbaceous perennial plant of the family *Asteraceae* (Compositae). It can be found growing in temperate regions of the world, in lawns, on roadsides, on disturbed banks and shores of water ways, and other areas with moist soils. *T. officinale* is considered a weedy species, especially in lawns and along roadsides, but it is sometimes used as a medical herb and in food preparation. As a nearly cosmopolitan weed, common dandelion is best known for its yellow flower heads that turn into round balls of silver tufted fruits that blow away on the wind. The flowers are used to make dandelion wine [1], the greens are used in salads, the roots have been used to make a coffee-like drink and the plant was used by Native Americans as a food and medicine [2]. Dandelions are grown commercially on a small scale as a leaf vegetable. The leaves (called dandelion greens) can be eaten cooked or raw in various forms, such as in soup or salad. They are probably closest in character to mustard greens. Usually the young leaves and unopened buds are eaten raw in salads, while older leaves are cooked. Raw leaves have a slightly bitter taste. Dandelion salad is often accompanied with hard boiled eggs. The leaves are high in vitamin A, vitamin C and iron, carrying more iron and calcium than spinach. Ground roasted dandelion root can be used as a coffee substitute [1,3,4]. The aim of current study was to establish the antioxidant capacity and total phenol contents of leaves and roots of Taraxacum officinal.

2. Materials and methods

Material. The leave and roots of *Taraxacum officinale* were collected in Konya province in Turkey. They were cleaned by clear water, and then analysed.

Method: Extraction: The fresh young roots and leaves of Taraxacum officinale were crushed n to obtain the pulp. 75g of the powdered sample were extracted in 300 ml mixture of 80 % methanol + 20 % water at 24 0C for 24 h. After filtration, the extract was used as a sample for furthure analyses.

The HPLC conditions for phenolic detection: Instrument: Shimadzu 10Avp; Solftware: Shimadzu, Class-VP; Enjection volume: 10 microliter; Colon: Nucleodur 100-5 C18 (250 x 4.6 mm, 5 micron);

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Mobile phase: A) % 0.5 HCOOH, B) AcCN; Flow rate: 1 ml/minute; Detector: Shimadzu SPD-M10Avp; Wave lengths: 330 nm; Oven temperature:40°C.

Total phenol content: Folin-Ciocalteu colorimetric method were applied and the results were expressed as mg GAE/g fresh weight [5].

Free radical scavenging activity: It was determined by DPPH method and the results were expressed as percent inhibition of 1,1-diphenyl-2-picrylhydrazyl by extracts [6].

Statistical analaysis: Results of the research were analysed for stastistical significiance by analysis of variance [7]. The data from experiment were subjected to ANOVA using randomized complete block design with statistical analysis system-ANOVA procedure [8].

3. Results and Discussion.

Antioxidant capacity and total phenol contents of the leaf and roots of *Taraxacum officinale* are given in Table 1.

Table 1. Antioxidant capacity and total phenol contents of leaves of *Taraxacum officinale*

Samples	Antioxidant capacity (Inhibition%)*	Total phenol (mg GAE/L extract)**
Leaf	14.67± 1.13	2.019±0.398
Root	20.58± 1.27	1.997±0.567

*results of 40µl extract in 1 ml solution

Antioxidant capacity values of lea and roots were determined as 14.67 and 20.58 %, respectively. In addition, total phenol contents of the leaf and roots of *T.officinale* were established as 2.019 and 1.997 mg GAE/L extract, respectively. Ismail et al. [9] (2010) determined phenolic content and antioxidant activity of cantaloupe (*Cucumis melo*) methanolic extracts. Tesoriere et al. [10] (2007) reported that bioactive components and antioxidant activity of Sicilian capers stabilized in salt were evaluated. The leaf extracts showed the highest total phenolic content (26.4±0.3 mg GAE/g extract) and total flavonoid content (69.7±3.37 µg RE/g extract) accompanied with best antioxidant activity through all antioxidant assays. Results were found different due to components compared with literature. These differences can be due to plant organs and differences and analytical conditions.

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