

Identification of Dandelion *Taraxacum officinale* Leaves Components and Study Its Extracts Effect on Different Microorganisms

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Abstract

Natural plant Dandelion *Taraxacum officinale* have been used as a phytomedicine, in this study, the chemical components of the Dandelion *Taraxacum officinale* leaves in watery and alcoholic extracts were identified. The results showed that watery extract was alkaline (presence of alkaloids) while the alcoholic extract was acidic in these contained: glycosides, alkaloids, phenolic compounds, tannins, flavonoids and proteins, while the saponins and resins were not found.

The result also showed that high concentrations of the following trace elements were found in the leaves (K, Ca, Na, Fe) with 185.1, 22, 19.5, 11.2 ppm, respectively and low concentrations of (Zn, Cd, Cu) with 6.3, 1.3, 0.2 ppm, respectively. The effect of these extracts on the different microorganisms were studied. It has been found that the concentration 0.5 mg/ml was effective on the inhibition of the growth of the intended bacteria (for both extracts) especially Gram positive, *Staphylococcus aureus* and the alcoholic extracts with concentration 0.5 mg/ml was more effective on the Gram negative, *E. coli*, than the watery extract, while less than 0.1 mg/ml failed to inhibit any microorganisms. The High Performance Liquid Chromatography (HPLC) was used to identify some flavonoids as compared to standard one; the analysis showed that both kaempferol and morin were absent.

Keyword: Dandelion *Taraxacum officinale*, Plant extraction, Trace elements, HPLC.

Introduction

Herbs have been used for a large range of purposes. They are found to be potent sources of natural components. Some have been used for hundreds of years, and their clinical and pharmacological effects have been extensively studied from various viewpoints [1]. This study focused on a used in folk medicine, *Taraxacum officinale*, commonly called Dandelion, which 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. Dandelion is considered a weedy species [2]. It has many English common names including: Blowball, Lion's-tooth, Cankerwort, Swine's snout, ...etc [3], Arabic names: Hindiba, Khas berri [4], The genus name *Taraxacum*, might be from the Arabic word "*Tharakhchakon*" [2], or from the Greek word "*Tarraxos*". The common name "Dandelion" comes from the French phrase "Dent de lion" which means "Lion's tooth", in references to the jagged shaped foliage [5]. Dandelion serves mainly as a diuretic, and

at the same time as a cleanser of the blood and liver. An active substance of dandelion reduces serum cholesterol and triglycerides because it intensifies bile secretion [1,6]. Dandelion improves the function of liver, pancreas and stomach. It is used to treat anemia, cirrhosis of the liver, hepatitis and rheumatism [1,7] anti-inflammatory, anti-oxidative, anti-carcinogenic, analgesic, anti-hyperglycemic, anti-coagulatory and prebiotic effects [8-13].

The leaves can be eaten cooked or raw in various forms, for assembling salads or soup, which also recommended as a natural source of **vitamin C** in the early spring. Dandelion water extract has anti-tumor activity attributed to polysaccharide [1]. The most important biologically active components are sesquiterpenic lactones, biotin, inositol and **vitamins B, D, E and phosphorous (P)**. The **leaves possesses a higher content of β -Carotene than carrot and more Fe and Ca level than spinach**, along with macro- and micro- elements [1,14].

Flavonoids and coumaric acid derivatives were identified from dandelion flower [7]. Its