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Comparative Antioxidant Power Determination of *Taraxacum officinale* by FRAP and DTPH Method

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Abstract

Antioxidant activity has been assessed by *in vitro* method for phytochemical fraction of plant; viz. water extracts of root, stem and flower of *Taraxacum officinale* plant. This investigation was under taken to evaluate water extracts of *taraxacum officinale* plant for possible antioxidants potential. Antiradical activity of all extracts was measured by 1, 1, diphenyl-2, picrylhydrazyl (DPPH) assay and was compared to ascorbic acid and Ferric reducing power (FRAP) of the extract. In the present study two *in vitro* models were used for evaluation of antioxidant activity. The first one method was for direct measurement of reducing power and the other one for radical scavenging activity. The present study revealed the *Taraxacum officinale* has significant radical scavenging activity.

Keywords: Antioxidant; Reducing power; Anti-radical; DPPH; *in vitro*; *Taraxacum officinale*

Introduction

The antioxidants are a variety of Vitamins, minerals and enzymes that help to protect the body from the formation and disposal of free radicals. Some people have the idea that an antioxidant is a specific nutrient, yet it actually refers to any nutritional compound that has these qualities. They are useful in the fight against ageing and degenerative diseases, it must be kept in mind that they have a wide sphere of influence on the body, and they can positively influence your general wellbeing.

The big source of antioxidants is the green belt in the form of plants, which make life possible on this planet. The use of herbal medicine for the treatment of diseases and infections are as old as mankind. The World Health Organization supports the use of traditional medicine, provided they are proven to be efficacious and safe (WHO 1985). In developing countries, a huge number of people lives in extreme poverty and some are suffering and dying for want of safe water and medicine, they have no alternative for primary health care.

Dandelion is considered to be an excellent general tonic and a "natural" diuretic. Dandelion tea has shown to be very helpful as a liver detoxicant. It also improves functions of gallbladder, pancreas, spleen and intestines. Dandelion can reduce inflammations in cases of hepatitis and cirrhosis, help gallstone dissipation and improve kidney functions.

An antitumor action of the aqueous extract of *Taraxacum officinale* has been reported in the scientific literature [1]. Dandelion's active ingredients are found in both the roots and leaves. The leaves contain bitter *sesquiterpene lactones* such as taraxinic acid and *triterpenoids* such as cycloartenol. The roots contain these compounds as well as phenolic acids and inulin [2,3]. Potassium is present in the leaves at 297 mg per 100 grams of leaves [3]. The leaves also contain substantial amounts of Vitamin A (14,000 units per 100 grams of leaves, compared with 11,000 units per 100 grams of carrots) [3]. The sesquiterpene lactones found in both leaves and roots have demonstrated diuretic effects [4]. They also stimulate bile flow from the liver. A Chinese case series reported that an herbal combination including dandelion was helpful in treating 96 adults with chronic hepatitis B infection [5]. In Chinese, Arabian and Native American traditional medicine it is used to treat a variety of diseases including cancer [6,7].

Evidence suggests dandelion may influence nitric oxide production [8]. Nitric oxide is important for immune regulation and defense; however, this molecule can be inhibited by cadmium. Classically listed as a cholagogue, dandelion root is approved by the German Commission E for the treatment of disturbances in bile flow, stimulation of diuresis, loss of appetite, and dyspepsia [9].

Dandelion root contains an abundance of sesquiterpene lactones, also known as bitter elements principally taraxacin and taraxacerin [10]. Other related compounds include beta-amyrin, taraxasterol, and taraxerol, as well as free sterols (sitosterin, stigmasterin, and phytosterin). Other constituents include polysaccharides (primarily fructosans and inulin), smaller amounts of pectin, resin, and mucilage, and various flavonoids. Three flavonoid glycosides – luteolin 7-glucoside and two luteolin 7-diglucosides – have been isolated from the flowers and leaves. Hydroxycinnamic acids, chicoric acid, monocaffeyltartaric acid, and chlorogenic acid are found throughout the plant, and the coumarins, cichoriin, and aesculin have been identified in the leaf extracts [11]. Dandelion leaves are a rich source of a variety of vitamins and minerals, including beta carotene, non-provitamin A carotenoids, choline, iron, silicon, magnesium, sodium, potassium, zinc, manganese, copper, and phosphorous.

The present research work was carried out about the antioxidant potential determination of the dandelion. As per the research methodology, the plant is heavily commenced with phytochemical, so could be associated with high potential of antioxidants, therefore

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