



Biochemical Properties Evaluation of some Libyan dates

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ABSTRACT

The current research targeted to estimate total sugars, fats, proteins, phenols, and antioxidant activity of ethanolic extract of five date varieties (al-Tabouni (TAB), al-Bakrari (BAK), al-Aami (AAM), al-Hamouri (HAM), and al-daqla (DAQ)) available in Libya. Also, phytochemical screening for ethanolic and aqueous extracts were performed. In general, the two extracts were rich in carbohydrates, proteins, phenols, flavonoids, alkaloids, and glycosides. However, steroids didn't exist in aqueous extract and saponins in both extracts. Total sugars were estimated by spectrophotometric methods, the proteins using the Kjeldahl method, and fats by the Soxhlet device, and their percent were ranged between 49 - 66%, 1.43 - 2.25, 0.10 - 0.25% (w/w) for sugars, proteins and fats, respectively. The total phenols were also estimated using the Folin reagent method, where the results are expressed as mg (gallic acid equivalent) per g (extract) and ranged from 13.5 to 20.5 mg/g, and the highest level was in the DAQ variety. The DPPH (2,2-diphenyl-1-picrylhydrazyl) scavenging method was also used to estimate total antioxidants where the two largest levels were found in the DAQ and HAM varieties with concentrations of 10.68 and 10.63 mg (ascorbic equivalent)/g (extract), respectively. DAQ extract has reduced the 50% of DPPH at lower concentration of 0.110 mg/ml (I_{C50}). Furthermore, good positive correlation was found between total phenols and DDPH in ethanolic extract.

1. Introduction

The date palm, *Phoenix dactylifera* L., is a tree of significant cultural, scientific, agricultural, and economic value in water poor areas such as the North Africa and Middle East [1]. Dates comprise a significant part of the diet in Arab countries [2]. There are over 400 different varieties, but only 50 - 60 are grown over large areas and considered of economic worth [3]. Date palm is local to Arab lands and has abundant varieties, each possessing its particular flavor and nutritional characteristic [4]. Date fruits act a fundamental part in the commercial and social prosperity of populations resident in arid and semi-arid zones of the world [5]. They are an essential main food in many countries throughout the world [6].

Dates are a food of high nutritional value and are an ideal food for humans, because they contain major nutrients such as sugars, proteins, fats and dietary fibers, and they also contain some vitamins such as vitamins (A

& C) in addition to a large amount of antioxidants and high proportions of poly phenols [7, 8]. Moreover, it is considered a natural source of minerals; such as calcium, iron, magnesium, sodium and phosphorous, because it contains very essential amounts for building the human body [9, 10]. Lately, number of studies have described such activity of date fruits [11-14]. It was found that consuming 7 dates, i.e. approximately 100 g of dates, supplies the human body with all its daily needs of magnesium, manganese, copper and sulfur, half of its needs of iron and a quarter of its needs of calcium and potassium, and dates contain high amounts of trace elements. Fluorine is estimated at five times what other fruits contain of this element [15]. In addition to the importance of dates as a high source of energy, they are characterized by having high percentages of calories, as they contain 3000 Kcal per kg of dates.

Date fruits retains abundant health helps, involving nephroprotective, antihyperlipidemic, anticarcinogenic, antimutagenic, antiatherogenic, gastroprotective, and

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