

CHAPTER I

INTRODUCTION

1.1 Background of Study

Phoenix dactylifera L or commonly known as the date palm is a tropical and subtropical tree that belongs to *Palmae (Arecaceae)* family and is one of the earliest plant cultivated by humans (Ahmed et al., 1995). *Phoenix dactylifera* L which is found mostly in North Africa and Middle East region is a monocotyledon plant from the palm tree family. Date palm can survive in the harsh arid environment and it is a good food source in regions whereby food is scarce.

Date palm is greatly sorted food as it is rich in carbohydrates and in fact has become a part of Arabian diet. According to Wan and Mohd (2013) in addition to being a good food source, date palm fruits have been used in traditional medicine to treat a variety of ailments and also good for health. Date fruit is a one seeded berry which is covered by a fibrous pericarp and a membranous endocarp. It comes in various shapes, sizes and weights based on type cultivated and environmental conditions. Generally dates are oblong in shape but some species might have an almost spherical shape. In Islam religion, dates are a diet of *sunnah* and are mentioned in many parts in the Quran. They are customarily used to break the day long fast during the holy month of Ramadan (Baliga et al., 1983). Other than that dates have been consumed since a long time ago because of its fascinating medicinal properties, economic values and aesthetic (Suliman et al., 2012).

Chemical compositions of the date bind to nutritional significance and health benefits (Barrett, 2013). For the minerals content, dates are a very good source of several minerals and can be an important source of potassium for consumer with high concentration (Chaira et al.,2007).

The physical characteristics of date fruit will effective display of the maturity, stage of ripeness and shelf life, nutritional components and tangible features which are related (Wulfsohn & Sarig ,1993). The percentage of water in the fruit is around 60 % when it reaches maturity to around 25 % when it is dried (Barreveld, 1993). The amount of sugar in ripe dates is approximately 80 % where the rest are fiber, protein, fat and minerals namely potassium, iron, copper, sulphur, magnesium and fluoric acid. Bedouin Arabs, who consume dates daily, have tremendously shown lower number of cancer and heart disease patients (El-sohaimy & Hafez ,2010).

1.2 Problem Statement

Dates that are sold in the supermarkets in Malaysia are generally related to the grade and price. The good packaging and labeling is normally more expensive. Ajwa is very expensive than other brands as this is the type of date that prophet *Mohamed* often take. Therefore, this research is conducted to study the minerals content of the dates from different brands collected in Malaysia supermarkets. The similarity of minerals content among dates such as potassium (K),Calcium (Ca),Manganese(Mn),magnesium (Mg), Ferum (Fe),Cupper (Cu) and Zinc (Zn) will be compared. Therefore, the brands of dates which are similar to ajwa can be determined.

1.3 Objectives

- i. To examine the physical features of date fruits namely weight, length and width to find similarity between different brands of date using chemometric techniques.
- ii. To determine the mineral content of various brands of dates available at the supermarket by Atomic Absorption Spectrometry (AAS).
- iii. To study the minerals profile of the date fruits using chemometric techniques.