## UNIVERSITI TEKNOLOGI MARA

# A COMPARATIVE STUDY OF HYLOCEREUS UNDATUS (WHITE DRAGON FRUIT) FOLIAGE AND PEEL FOR ANTIOXIDANT ACTIVITY AND PHENOLIC CONTENT

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### **ABSTRACT**

Hylocereus undatus foliage is believed to have high antioxidant compared to peels of Hylocereus undatus, which are already known to contain high total phenolic content and antioxidant activities. Total phenolic content and antioxidant activity for two different solvent extractions namely; chloroform and methanol were done by Folin-Ciocalteu method and DPPH free radical scavenging assay. In determining total phenolic content, the results show that methanol extraction (30.30  $\pm$  0.0065 mg GAE/100 g extract in foliage;  $45.815 \pm 0.0233$  mg GAE/100g extract in peel) gives higher phenolic content than chloroform extraction (5.92  $\pm$  0.0148 mg GAE/100 g extract in foliage; 18.89  $\pm$  0.0055 mg GAE/100g extract in peel). However, in DPPH scavenging assay, methanol extraction  $(88.81 \pm 0.0012 \% \text{ in foliage}; 97.42 \pm 0.0061 \% \text{ in peel})$  has high scavenging activity compared to chloroform extraction (38.30  $\pm$  0.0080 % in foliage; 18.71  $\pm$  0.0068 % in peel) which shows that antioxidant activity in chloroform solvent extraction is higher compared to methanol solvent extraction. When a comparison is made between foliage and peel, it shows that the peel contains more antioxidants than foliage. This experiment has prove that Hylocereus undatus foliage has the same potential as Hylocereus undatus peel in scavenging free radicals in human body.

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### **CHAPTER ONE**

### INTRODUCTION

### 1.1 RESEARCH BACKGROUND

Dragon fruit plant that consists of its foliage and fruit is locally known as pitahaya fruit and it is one of the cactus family, *Cactaceae* (Ruzlan et al., 2010). There are many types of dragon fruit species, but one of it that is commonly cultivated in Malaysia is *Hylocereus undatus* (dragon fruit with red peel and white pulp). *Hylocereus undatus* is a native fruit from Mexico and Central South America (Mello et al., 2015). The best climate condition for dragon fruit plantation is dry, tropical or subtropical with annual rainfall ranges from 22 to 50 inches per year. The flowers of dragon fruits with diameter up to 30 cm only can bloom twice in a month, around 1st and 15th days of the lunar calendar(Halimoon & Hasan, 2010). Ruzlan et al., (2010) has stated on their research that in the cultivation of dragon fruit, one plant can only produce about four to six cycles of fruits per year and the fruits are harvested when they are fully expanded and matured as their skins form 85% of red colour. Plate 1.1 shows the *Hylocereus undatus* fruit whereas Plate 1.2 shows its foliages and flowers.

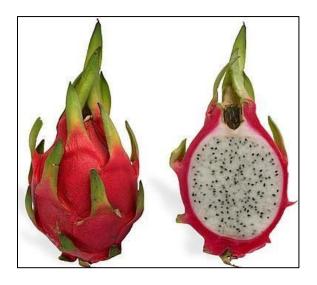


Plate 1.1: Hylocereus undatus Fruit