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DETERMINATION OF TOTAL PHENOLIC CONTENTS, ANTIOXIDANT CAPACITIES, AND EFFECTS OF PROLONGED HEATING ON ANTIOXIDANT ACTIVITY IN MALAYSIAN UNIFLORAL HONEYS

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TABLE OF CONTENTS

ABSTRACT

The purposes of this study were to determine total phenolic content of honey, analyze honey's antioxidant activity, and determine the correlation between antioxidant activities with total phenolic contents. This research also determines the effects of heating on honey's antioxidant activities. Six of the Malaysian unifloral honeys were used in this study; they are named 'belimbing'(star fruit) honey, 'pucuk daun'(leaf) honey, 'jambu air'(wax apple) honey, 'durian'(durian) honey, 'kelapa'(coconut) honey and 'bunga gelam'(malaluka) honey according to their floral sources. The antioxidant activities of above six selected Malaysian unifloral honeys were evaluated. Total phenolic content was determined using Folin–Ciocalteu method. The method used by Aline Meda et al. (2004) for the measurement of total phenolic was followed in this study. The antioxidant activities were determined by using 1, 1-diphenyl-2-picrylhydrazyl (DPPH) assay. The method used by Aljadi et al (2004) for the measurement of the antioxidant activity of honey was followed in this study. From the results obtained, 'durian' honey sample shows the highest total phenolic contents, while 'bunga gelam' honey sample shows the highest antioxidant activities compared to other honey samples. Total phenolic content and antioxidant capacities have been found to be dose-dependent. The characteristic antioxidant activities showed a marked correlation with the total phenolic contents. This research has found that honey's antioxidant properties have shown to be decreased when heated to prolonged 100°C.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Honey is a sweet and viscous fluid, produced by honey bees from the nectar of flowers. Honey bees that commonly produce honey are from genus of *Apis.* But, honey also can be produced by other bees or insects. Its name comes from the English *hunig,* and it was the first sweetener used by human. Honey has sweet, pleasant taste and is known by it's yellowish colour. Many medicinal results is obtained by honey, honey is used in many healing process by many cultures throughout the world. The most important compound found in honey is phenolic. Honey contains a number of components known to act as antioxidants; these include vitamin C, vitamin E,enzymes such as catalase, peroxidase and phenolic (The National Honey Board, 2003). Previous works have indicated that the antioxidant activity of honey varies widely, depending on the floral source (Aline Meda et al., 2004).

Honey is significantly sweeter than our daily sugar and has a pleasant taste with distinctive flavor which leads some people to prefer it over sugar and other sweeteners.