UNIVERSITY TEKNOLOGI MARA

EVALUATION OF THE ANTIOXIDANT ACTIVITY OF TUMERIC *(CURCUMA LONGA)*

NORDAYANTI BINTI MOHD ROSDI

Dissertation submitted in partial fulfillment of the requirements for the degree of bachelor of Pharmacy (Hons)

Faculty of Pharmacy

November 2009

ABSTRACT

The antioxidant capacities of the aqueous extract of the rhizome of Curcuma longa, a spice known as turmeric or 'kunyit' by Malaysian community, were investigated. The antioxidant capacity was evaluated by different methods such as total phenolic assay (TPA), free radical (DPPH) scavenging activity, and ferric reducing power (FRAP) assay. The total phenolic content was 0.099 ± 0.016 mg/mg of extract expressed as gallic acid equivalents. In the FRAP assay, the results showed only 0.27 ± 0.05 µg/ml, while the controls, trolox, ascorbic acids and curcumin , produced 7.38 ± 0.91 µg/ml, 7.61 ± 0.42 µg/ml, 5.87 ± 1.74 µg/ml respectively. The median inhibitory concentration (IC_{50}) for free radical scavenging of DPPH was at a concentration of 10 mg/ml, *C.longa* aqueous extract exerted about 10 % DPPH scavenging activity. As a conclusion the aqueous extract of *Curcuma longa* possesses antioxidant activity and support the previous report that phenolic compounds are accountable for antioxidative activity.

ACKNOWLEDGEMENTS

In the name of Allah, the compassionate, and the Merciful. Alhamdulillah, with this will and guidance, this research project and thesis is completed.

I wish to express my deepest gratitude and extent special thanks to my supervisor, Professor Dr. Aishah Adam for her interest, support, and unfailing guidance throughout the study and in the preparation of this thesis. Her suggestions and constructive criticism are greatly appreciated.

Many thanks are due to Cik Sarah and Cik Masdiana for their guidance in the process of completed this work.

My sincere appreciation is also extended to all lecturers and the technical staff of the Faculty of Pharmacy, UiTM for their support and assistance. To all my family and friends, thanks for your understanding, support and encouragement in completing this research project.

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INTRODUCTION

1.1 Introduction

Antioxidants are substances which counteract free radicals and reactive oxygen species (ROS) to prevent oxidative damage by deteriorating these molecules before they can react with biological targets, preventing deleterious chain reactions or inhibiting the activation of molecular oxygen to highly reactive products (Azzi *et al.*, 2004). In biological systems, the oxidation process (including a minor contribution from ionizing radiation) produces highly reactive free radicals, which can readily react with macromolecules to damage them.

There are several endogenous enzyme systems and substances within cells that detoxify free radicals and reactive oxygen species. These include superoxide dismustase (SOD), catalase, gluththione peroxidase, gluthathione reductase, glucose-6-phosphate, and dehydrogenase. Cells can also obtain antioxidants from the circulation following the consumption of antioxidant -rich beverages and food.