UNIVERSITI TEKNOLOGI MARA

ANTIPROLIFERATIVE ACTIVITY OF VARIOUS FRACTIONS FROM METHANOL EXTRACT OF THE LEAVES OF *MUNTINGIA CALABURA*

MOHD FAIZ BIN MUSTAFFA

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

Faculty of Pharmacy

April 2010

ACKNOWLEDGEMENT

Alhamdulillah, all praise to Allah S.W.T. with his abundant grace and blessing, this study has been done successfully. The deepest appreciation is expressed to my supervisor, Assoc. Prof. Dr Zainul Aminuddin Bin Zakaria for providing me with direction, supervision and encouragement throughout the project. Special thanks to the coordinator of this course, Dr. Kalavathy Ramasamy for support and advice to me. I thank Professor Aishah Adam (Dean of Faculty) and all my other lecturers who made an input throughout the course.

I also wish to thank Prof. Dr. Maznah Ismail (Head of Molecular Biomedicine Laboratory, Universiti Putra Malaysia) for providing facilities throughout my laboratory project. I am also grateful to Pn. Norhaszalina Md Isa (Science Officer of Molecular Biomedicine Laboratory, Universiti Putra Malaysia) for advice and assistance on anticancer assay in my project.

I would like to take this opportunity to thank all the rest of the post graduate under supervision Assoc. Prof. Dr. Zainul and Prof. Dr Maznah who readily offered assistance in times of need. Much respect and greatest thanks to my fellow, Muhammad Fikri Musa for putting me up and work together with me all the time during this study. My special thanks to all my friends for their support. Lastly, I would like to thanks to my family for their encouragement and understanding throughout the project. Thank you.

TABLE OF CONTENTS

ABSTRACT

The World Health Organization (WHO) reported in 2007 that 7.9 million deaths worldwide (or 13% of total deaths) due to cancer, and the most common cancer in the world are lung, breast and colorectal cancer. 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay was used in the *in vitro* anticancer activity of *Muntingia Calabura* methanol extracts studies against MCF-7, HL60 and A549 cancer cell lines. *M. Calabura* fresh leaves were air-dried approximately 2 weeks then soaked in methanol prior evaporated to dryness. The methanol crude partitioned sequentially in hexane, chloroform and methanol itself and subjected to anticancer activity. Methanol partition showed potent anticancer activity compare with others partition and methanol crude against MCF-7 (8.5 µg/mL), HL60 (3.2 µg/mL) A549 cancer cell (11 µg/mL). The potent activity of methanol partition towards both cancer cell lines was prior subjected to fractionation by using vacuum liquid chromatography (VLC). The fractions of methanol partition showed less potent against tested cancer cell line as compared to methanol partition itself exclude F5 and F6 tested on MCF-7 cancer cell line (5.5 and 7 µg/mL). Interestingly, all fractions failed to exert cytotoxic activities on cancer cell line especially on MCF-7, possessed cytotoxic activities on normal cell line, 3T3, which indicates the unsafe used of the fractions as chemotherapy. In conclusion, the extracts of *M. Calabura* possess potential anticancer activity that requires further thorough studies.

CHAPTER I

INTRODUCTION

1.1 Backgrounds

Several trends or approaches have been applied by researchers to discover and develop a novel drug. One of the most popular approaches applied by researchers in Malaysia as a tropical country is irrational approach. Irrational approach is a historical method of discover and develop new drugs by using natural products as their main sources.

The terms natural products refers to the usage of natural sources such as plant, animal and also marine sources as therapeutic agents. Crude of natural products like herbs has long been used and remained to be the basis of all traditional medicines worldwide especially in Asia which include the traditional Chinese medicine (China), jamu (Indonesia) and also ayurvedic medicine (India) (Itokawa *et.al*, 2008). In Western countries, a rapid change is seen in the popularity of using natural products to maintain health and for alternative therapy (phytotherapy and homeopathy) over the last 20 years (Wills *et.al*, 2000). The term "Integrative medicines" are now applied worldwide by combining the alternative medicine (aforementioned traditional or folk medicine) with conventional medicine. Plants are good sources of pharmacologically active metabolites and have long been appreciated for treating various illnesses and also in the development