UNIVERSITI TEKNOLOGI MARA

CONFOCAL MICROSCOPIC ANALYSIS OF HUMAN COLORECTAL ADENOCARCINOMA CELL LINES (HT-29) AGAINST BANANA SOFT PITH ETHYL ACETATE EXTRACT

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ABSTRACT

Colorectal cancer (CRC) has becomes the second most common cancer in Malaysia. There are numbers of treatment available for CRC such as chemotherapy, radiation therapy and surgery. However, those treatments have various side effects that reduced their quality of life. Thus, the drug development on natural products is crucial in order to reduce the side effect of modern therapies. This study was done to morphologically identify the mode of cell death induced by ethyl acetate extract *Musa Paradisiaca cv Awak* against colorectal cancer adenocarcinoma cell lines (HT-29) using confocal view of unstained sample and AO/PI staining. Both confocal view of the unstained sample and AO/PI staining were done for 24, 48 and 72 hours of incubation time by using various concentrations which are 0, 50, 100, 250, 500 and 1000 µg/ml. The view of unstained sample displayed the distribution of the cells after treated with the banana soft pith extract, whereas the cells stained with AO/PI stain showed the cells undergo morphological changes such as chromatin condense, cell shrinks and membrane blebbing which indicates the apoptotic events.

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TABLE OF CONTENTS

CHAPTER ONE

INTRODUCTION

1.1 Background

Cancer is among the most serious health problems throughout the world where the cells undergoing uncontrollable growth and being divided continuously. These cancer cells will also spread to other part of the body, invade the other tissues and form new tumours. This health problem keeps on becoming a burden as the numbers of new cases continue to rise from time to time. The estimated number of cases occur in 2008 are about 12.7 million incidence and 7.6 million of death cases being recorded (Greening *et al.*, 2013).

In United States, colorectal cancer is in the third place for the most type of cancer that can cause mortality of the patients, for both in men and women (Katz *et al.*, 2014). The colorectal adenocarcinoma is caused by the abnormal growth of cells in the colon. Adenocarcinoma is a cancer that initiate in the cell that produce and release mucus. Colon is an important part of the body that regulates the reabsorption process. The progress in the lifestyle and the enhancement of the countries might be the reason of the increase of the incident rates of the colon cancer (Raskin *et al.*, 2013).

All the cells in the body will undergo a process that is known as cell death, which is very important to eliminate the unhealthy and unwanted cells as well as to maintain the