UNIVERSITI TEKNOLOGI MARA

APOPTOTIC ACTIVITY OF MANUKA HONEY TOWARDS MCF-7 BREAST CANCER CELL LINES

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ABSTRACT

Breast cancer is a type of cancers that most commonly occurred in women. Despite all the therapies available nowadays, alternative therapeutic measure such as natural products can be developed to fight against this deadly disease. Anti-cancer therapy by using honey which has antioxidant properties can be used to induce the apoptotic activity and causing morphological changes to the cell. In this experiment, apoptotic activity of MCF-7 breast cancer cell lines challenged with Manuka honey was studied. The content of phenolic and flavonoid in the honey which have antioxidant activity was quantified using total phenolic content and total flavonoid content test. The results showed that Manuka honey has 64.67g of GAE/L and 33.13 g of CE/L. Apoptotic features of treated MCF-7 cells were examined under the transmission electron microscope. The image showed that treated cell exhibited signs of apoptosis including chromatin condensation, nuclear shrinkage, membrane blebbing, cytoplasmic shrinkage and cytoplasmic vacuoles.

CHAPTER 1

INTRODUCTION

1.1 Background of Study

Breast cancer is a type of cancer that commonly occurs in women. More than one million cases reported annually causing about 600,000 deaths in worldwide. The rate of breast cancer occurrences is highest in industrialised nations such as USA, Australia, and Western Europe. The incidence has steadily increased in many countries due to the changes in reproductive patterns and regional increases in mammography[1]. In Asian population, the incidence of breast cancer is rapidly increasing including in China, India and Singapore[2].

Decades ago, mouse model of human malignancy have significantly contributes to further understandings on the pathogenesis of the disease and also the therapeutic purpose[1].Various therapies including chemotherapy are not effective against the breast cancer cells as the cancer stem cells (CSCs) is chemo-resistant. The CSCs are believed to play important role in carcinogenesis, local invasion, metastasis formation and also a key factor in chemo- and radiotherapy resistant[3].