

UNIVERSITI TEKNOLOGI MARA

**ANTIPROLIFERATION EFFECT OF
CLINACANTHUS NUTANS ON THE MCF-7
HUMAN BREAST CANCER CELL LINE**

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ABSTRACT

Breast cancer is the most common cancer among Malaysian women. In fact, previous study showed poor survival rate of breast cancer among Malaysian women (CH Yip, 2014). In the view of hormonal risk factor, persistence elevated oestrogen level in blood has been shown associated with the risk of breast cancer (James D. Yager, 2006). Hence, MCF-7 human breast cancer cell line which represents the Luminal A breast cancer subtype [responds to endocrine therapy (ER+)] was chosen for the study. *C. nutans* is believed to be able to be used as effective alternate anticancer regimen (Yong, et al, 2013) Flavonoids and other bioactive compounds contained in *C. nutans*, are estrogen disruptor compound that enable the antiproliferation effects on cancer cells (Batra, Sharma, 2013).

MCF-7 cells were treated with seven different concentrations of *C. nutans* and the antiproliferation effect was tested by using MTS assay. The results showed a decrease in pattern in the number of viable cells from negative control to the treated cells. The finding of inhibitory concentration of *C.nutans* or IC 50 on the cells which was based on the percentage of cell viability of MCF-7 human breast cancer cells was found in ethanol, methanol and hexane extract of *C. nutans*. Hence, these extracts managed to reach 50% inhibition of cells. Ethyl acetate extract of *C. nutans* which did not managed to reach IC 50, still showed inhibitory effect based on the decrease pattern of the cell viability. In conclusion, *C.nutans* extracts showed potential in inhibiting the proliferation of MCF-7 human breast cancer cells. The

CHAPTER 1

INTRODUCTION

1.1 Study Background

Breast cancer is one of the reproductive system disorders in females. This second-leading cause of death disease continues to frequently occur in women. Genetic predisposition and a number of lifestyles have shown to cause rise in the occurrence of breast cancer among women in Malaysia (CH Yip, 2014). There are numbers of other risk factors associated with the existence of breast tumour lesions such as the use of oral contraceptives (CH Yip, 2014). Persistence elevated oestrogen level in blood has been shown associated with the risk of breast cancer in many studies (James D. Yager, 2006). Breast cancer subtypes include luminal A, luminal B, human epidermal growth factor receptor 2 (HER2), basal and normal (Speirs, 2011). In this study, MCF-7 human breast cancer cell line, which represent luminal A breast cancer subtype, is chosen for the evaluation.

The definite primary prevention strategy for breast cancer has not been established because of the unknown aetiology of the disease (Abdullah et al., 2013). The previous study even showed the low five years survival rate of breast cancer patients