

CURRENT RESEARCH AND DEVELOPMENT IN BIOTECHNOLOGY ENGINEERING AT IIUM

VOLUME II

Editors:

Ibrahim Ali Noorbatcha
Hamzah Mohd. Salleh
Mohamed Elwathig Saeed Mirghani
Raha Ahmad Raus



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CHAPTER 42

SCREENING ANTI-CANCER COMPOUNDS FROM PALM OIL INDUSTRIAL WASTES

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ABSTRACT

In this study, anti-tumor promoting activity against breast cancer cells (MCF7) of palm oil industrial wastes crude extract was investigated. Methanol and water extracts of the industrial wastes were tested using MTT assay. The most active extract for inhibition of the proliferation of breast cancer cell was methanolic extract of palm leaf waste. All of the other industrial waste extracts also showed anti-cancer activity except for aqueous extract of palm oil mill effluent (POME). With respect to these results, palm leaf wastes could be studied further for their potential to treat breast cancer cells.

Keywords: anti-tumor activity, MTT assay, *Elaeis guineensis*, empty fruit bunch (EFB), palm oil mill effluent (POME).

INTRODUCTION

Breast cancer is one of the most common forms of cancer in women worldwide. In Malaysia, it has been reported that one out of 19 Malaysian women is likely to develop breast cancer. It is also reported that breast cancer was the commonest cancer in all ethnic groups and all age groups in females from the age of 15 years. Fortunately, there are many types of anticancer drugs to treat breast cancers which include tamoxifen, taxol, abraxen and so on (Charles, 2001; Stenger and Bloom, 2005). However, these drugs impose side effects that are quite harmful to the patients. This triggers the arising need for the development of new drugs that have reduced side effects as well as more effective in killing cancer cells. One of the most abundant sources for new drugs to treat breast cancer is plant. This study concentrates on screening agricultural plants and their industrial wastes for anti-tumor promoting activity against breast cancer.

Elaeis guineensis or oil palm trees are agricultural plants that are widely cultivated in Malaysia for its oil. Palm oil is rich in palmitic, oleic as well as vitamin E and carotenoid (Sundram 2003) that are known to benefit the human health. Interestingly, recent study showed that its leaves possess anti-hypercholesterolemic and anti-hypertensive effects on rats (Mohamed et al., 2007). This finding was surprising and therefore the possibility for its leaves