

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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Faculty of Engineering
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CHAPTER 44

SCREENING ANTI-CANCER COMPOUNDS FROM RICE INDUSTRIAL WASTES

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ABSTRACT

In this study, anti-tumor promoting activity against breast cancer cells (MCF7) of rice 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 aqueous extract of rice mixture wastes. All of the other industrial waste extracts also showed anti-cancer activity however, at lower level. With respect to these results, rice mixture wastes could be studied further for their potential to treat breast cancer cells.

Keywords: anti-tumor activity, MTT assay, *Oryza sativa*, bran, husk

INTRODUCTION

Cancer is the major health problem in Malaysia. It is estimated that the annual incidence of cancer is 30 000. There are many kind of cancer cases reported in Malaysia which are suffering by male and female from age of below 5 years up to 75 years old and the critical age is in between 35 to 55 years old. The highest percentage of total number of cancer case is female breast cancer and in addition the cervix uteri cancer also among the high case happened in Malaysia (Cuzick et al., 2004; Du and Gor, 2007).

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 et al., 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.

Oryza sativa or paddy is planted to produce rice and it is related to other grass plants such as wheat, oats and barley. The most studied part of the paddy is rice bran. Rice bran is an excellent source of proteins, lipids, vitamins, and trace minerals. It is reported to reduce