

The Cytotoxic Effect of PM 701 and its Fractions on Cell Proliferation of Breast Cancer Cells, MCF7

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ABSTRACT

Breast cancer is the most common malignancy in the world among women. Many therapies have been designed to treat this disease. Mastectomy, chemotherapy and radiotherapy are still the main therapies of breast cancer. However, the results were unsatisfactory and still far from the ideal treatment. PM 701 is a natural product, has anticancer activity. The bioactive fraction PMF and subfraction PMFK had been isolated from PM 701. PM 701 and its fractions were proved to have a cytotoxic properties against different cancer cell lines. This study is directed for the further examination of lyophilized PM 701 and its active fractions on the growth of breast cancer cells (MCF-7). PM 701, PMF or PMFK were adding to the cultural medium, where MCF-7 is incubated. PM 701, PMF or PMFK were able to inhibit significantly the proliferation of MCF-7 cells. These new agents were proved to induce apoptosis of the breast cancer cells; through its direct effect on the nuclei.

Key words: Anticancer agent, breast carcinoma, MCF-7 cell line, PM 701, PMF, PMFK

INTRODUCTION

The management of malignancies in humans still constitutes a major challenge for contemporary medicine (Coufal *et al.*, 2007; He and Liu, 2007; Widodo *et al.*, 2007; Feng *et al.*, 2006). Although with progress in understanding cancer nature, many therapeutic anticancer have been developed which has relied on surgery, chemotherapy, radiotherapy, hormone therapy and more recently immunotherapy (Khorshid *et al.*, 2010). However, all are still far from the ideal treatment, which selectively kill the malignant cells and sparing the normal healthy tissues and functions of vital organs (Grever and Chabner, 1997; Moshref, 2007).

Breast cancer is the most common malignancy in the world among women. Over a million women are diagnosed every year and 370,000 were died due to breast cancer (Schwartzmann *et al.*, 2002). Many drugs and therapies have been designed to treat this disease. The identification and elucidation of the molecular components and signals that control different biological processes underlying the regulation of cell growth, differentiation and apoptosis of the mammary epithelium is important to lead to the development of new drugs and play an important role in designing an anti-cancer drug (Grever and Chabner, 1997; Moshref, 2007; Schwartzmann *et al.*, 2002).

Hence, anti-cancer drug substitutes are actively sought after in the hopes of finding alternative ways to suppress the growth of breast cancer cells. The PM 701 an anticancer substrate (Khorshid *et al.*, 2005; Khorshid, 2005, 2008; El-Shahawy *et al.*, 2010; Moshref *et al.*, 2006) was used in this study to test its effect on MCF-7 human breast cancer cell line. In addition to screening of its active fraction PMF (Khorshid *et al.*, 2009, 2011) as a novel anti-cancer compounds for human breast cancer, this study also seeks to determine the effect of PMFK subfraction