UNIVERSITI TEKNOLOGI MARA

MDA-MB-468 CELLS AS A MODEL TO STUDY MORPHOLOGICAL CHARACTERISTICS OF EMT IN HUMAN BREAST CELL LINE

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Dissertation submitted in partial fulfillment of the requirements for the Bachelor of Pharmacy (Hons.)

Faculty of Pharmacy

June 2014

ACKNOWLEDGEMENTS

All the praise and glory to Allah S.W.T who blessed me with health and strength to complete my research and thesis writing. The writing of this thesis has been one of the most significant academic challenges I have ever had to face.

I would like to express my deep gratitude to Doctor Aisyah Hasyila binti Jahidin, my research supervisors, for his patient guidance, enthusiastic encouragement, advice, assistance in keeping my progress on schedule and useful critiques of this research work.

Not forgotten to my partner, Amirul Iqhwan bin Azlan Nizam, I would like to thank for his valuable ideas and advices. A big contribution and hard work during the first semester is very great indeed. I would also like to extend my thanks to the technicians of Pharmaceutical Nano-Technology Laboratory, Cell Culture Pharmacology Laboratory and Medical Imaging Laboratory, Faculty of Pharmacy, UiTM Puncak Alam for their help in offering me the resources in running the program.

Finally, I wish to thank my parents for their support and encouragement throughout my study.

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ABSTRACT

Breast cancer is the most common type of cancer which is diagnosed among women in the world. Breast cancer development leads to increase in mortality rate. It can be easily spread to all part of the body due to metastasis. Metastasis can be induced via a process called epithelial to mesenchymal transition (EMT). During this process, the cell line initially with an epithelial characteristic will undergo transition to acquire mesenchymal properties which lead to increase in invasiveness, migratory capacity, resistance towards apoptosis, and the production of extracellular matrix in the cells. This transition can be induced by certain agents such as epidermal growth factor (EGF), hypoxia, and tumour necrosis factor (TNF). EMT can be indicated by morphological changes of the cell lines as well as the changes in biomarkers activity like twist, snail, and vimentin. Breast cancer cell lines consist of four general morphological characteristics which are round, mass, grape-like, and stellate type. Each type of morphology has their own characteristics and these will influence their metastatic ability. Breast cancer cell lines also have different gene cluster and receptor which indicate the characteristics of the cell lines and the prognosis outcome of the treatment. This study will focused on the morphology of MDA-MB-468 breast cancer line in comparison with morphology of MDA-MB-231 and the characteristics that lead them to undergo metastasis through epithelial to mesenchymal transition process. The results suggested that both of these cells had the morphology and characteristics to undergo EMT.

CHAPTER 1: INTRODUCTION

1.1 BREAST CANCER

Breast cancer is a malignant tumor that occurs most in women globally, but men can get breast cancer, too. In Malaysia, breast cancer is also the most common cancer in females and the first most common cancer among population regardless of sex (Hisham & Yip, 2004). According to National Cancer Registry (NCR) (Yip et al., 2006), there were 3,242 female breast cancer cases diagnosed in 2007, accounted for 18.1% of all cancer cases reported and 32.1% of all female cases. Incidence of breast cancer was highest among Chinese where the age standardized rate (ASR) was 38.1 per 100,000 population followed by Indian and Malay with the ASR of 33.7 per 100,000 population and 25.4 per 100,000 populations respectively. The percentage of breast cancer detected at stage I and II was 58%.

Table 1.1: Gender, number of new cases, percentage, crude rate (CR), age standardized rate (ASR) and Cumulative Risk (CumR), Malaysia in 2007.

SEX	NO.	%	CR	ASR	CumR
Female	3,242	100	26.0	29.1	3.1