

UNIVERSITI TEKNOLOGI MARA

**CYTOTOXICITY OF PACLITAXEL LOADED AND
SURFACE COATED POLY-METHACRYLIC ACID-
PEG-CHITOSAN BASED NANOPARTICLES ON ER-
BREAST CANCER CELLS (MDA 231)**

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ABSTRACT

In recent year, breast cancer has been formed as major cause of mortality rate among Malaysian women. There were few studies that reviewed the most effective drug chemotherapy for breast cancer. Paclitaxel is an anticancer drug that has been used effectively in chemotherapy for various cancers. However, with its hydrophobic characteristics, it is administered with other compounds which are bringing up various side effects. In present study, effect of Paclitaxel loaded and surface coated Poly-Methacrylic Acid-PEG-Chitosan Based nanoparticle was assessed for their cytotoxic potential against MDA 231 cell lines using SRB assays. The novel formulation showed IC₅₀ value of 4 µg/ml against MDA 231 cell lines. This mean, the Poly-Methacrylic Acid-PEG-Chitosan Based nanoparticles has cytotoxic activity of paclitaxel on MDA 231 cell lines.

CHAPTER 1

INTRODUCTION

Recently, second top disease that leads to death is cancer. Cancer is uncontrolled growth of new cells in the body. There are two types of neoplasm which is benign and malignant. Benign neoplasms grow slowly and are usually not fatal whereas malignant neoplasm grow rapidly and are capable of causing death. For the cancer diseases, it's usually metastases at distant sites that may cause of death (McConnell 2007).

There are many type of cancers such as lung cancer, breast cancer, pancreatic cancer, prostate cancer and cervix cancer and almost in whole human bodies can develop cancer cells. In this modern life, the breast cancer is most common malignant diseases that develop in women body (Weigelt, Peterse, and Veer 2005). The report from National Cancer Institute, they reported that on January 1, 2009, in the United States there were approximately 2,747,459 women alive who had a history of breast cancer. This includes any person alive on January 1, 2009 who had been diagnosed breast cancer at any point prior to January 1, 2009 and includes persons with patients that already cured by this disease (National Cancer Institute,2012).

Therefore, the best treatment to cure the breast cancer patient can be in term of surgery, radiotherapy and chemotherapy. Most of the patients, they can be treated by