

UNIVERSITI TEKNOLOGI MARA

**SYNERGISTIC EFFECT OF *ANNONA MURICATA*
ETHANOLIC EXTRACT WITH CISPLATIN
AGAINST BREAST CANCER CELL LINE (MDA-
MB-468)**

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ABSTRACT

Annona muricata has been used as a traditional medicine to as it has wide range of therapeutic effects. One of the uses of *Annona muricata* is it is used as anticancer. The aim of this study is to determine the inhibitory concentration by 50% cancer cell population (IC_{50}) of *Annona muricata* and to assess the synergistic effect of *Annona muricata* when used with cisplatin. The cell viability was determined by using MTT assay. Cells were treated in triplicate with single drug and combined drug with varied concentrations. The result shows that the IC_{50} of the *Annona muricata* ethanol extract is 1640.3731 μ M. The isoboligram and combination index (CI) value show there is a synergism between *Annona muricata* and cisplatin when the concentration of *Annona muricata* ethanol extract is fixed and the concentration of cisplatin is varied. The AMEE shows antiproliferative activity on breast cancer cell line MDA-MB-468, although the IC_{50} value is relatively high. Interestingly, AMEE shows synergistic effect when used in combination with chemotherapy agent, cisplatin.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Breast cancer is one type of cancer, which malignant tumours start in the cells of breast. Chemotherapeutic drugs are the only choice to treat malignant breast cancer as well as increase the lifespan of the patient (Decatris et al., 2004). Conventional chemotherapeutic drugs that are available worldwide are such as cisplatin and tamoxifen. However, the use of conventional chemotherapeutic drugs can cause side effects such as vomiting, nausea, hair loss, dry mouth, peripheral neuropathy, ototoxicity and nephrotoxicity. Some plants can be used as traditional medicine to treat various types of cancers. One of the plants that have potential in treating cancer is *Annona muricata*.

Annona muricata, also known as soursop, belongs to the family Annonaceae. *Annona muricata* has significant effect on various cancer cell lines, including lung cancer cells as well as colon cancer cells (Moghadamtousi et al., 2015). Studies have shown that extract of *Annona muricata* has less cytotoxic effects on normal cell lines (Zorofchian Moghadamtousi et al., 2015). Annonaceous acetogenins are one of the compounds that are responsible for *Annona muricata* anticancer activity (Sawant & Gogle, 2014).

In this project, the effect of *Annona muricata* on breast cancer cell line MDA-MB-468 and fibroblast CRL-2522 were studied. The inhibitory concentration by 50%