UNIVERSITI TEKNOLOGI MARA

# QUALITATIVE ANALYSIS OF BANANA SOFT PITH CRUDE EXTRACT ANTI-PROLIFERATIVE PROPERTIES AGAINST OESTROGEN POSITIVE BREAST CANCER CELL LINES (MCF-7)

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# ABSTRACTS

Apoptosis is a programmed cell death also known as cellular suicide. Mostly cancer cells have loss the ability to induce apoptosis and caused excessive proliferation. Previous study showed that crude extract from *Musa x Paradisiaca cv Abu* was found to produce cytotoxic effect against oestrogen positive breast cancer cell-line, MCF-7. The present study was able to identify some typical morphological changes of apoptosis in BSP treated MCF-7 cell lines. In AO/PI staining method, treated cells (50, 100, 250, 500, 1000 μg/ml) shown morphological changes such as membrane blebbing, nuclear fragmentation, chromatin condensation and cell shrinkage. Further validation using TEM ($IC_{50}$) was used to enhance the visualization of such changes. Similarly, membrane blebbing, chromatin condensation, nuclear fragmentations were observed. In addition apoptotic body, vesicles and vacuoles formation were clearly distinguished. These characteristics have strongly associated with apoptosis. This study has yet to prove that crude extract from *Musa x Paradisiaca cv Abu* possess potential anticancer properties. Further investigation are required to support the finding

# CHAPTER 1

# INTRODUCTION

## 1.1 Background of Study

Cancer is an awful disease that could affect anyone in the world (Hanahan & Weinberg, 2011). It has been appraised that about one out of four deaths occur due to this disease making it a global public health concern (Siegel, Naishadham, & Jemal, 2012). Cancer developments are characterized by excessive and uncontrollable cell proliferation with defection in cell apoptosis mechanism and gained ability to invade normal cells (Hanahan & Weinberg, 2011; Mound *et al.*, 2013).

Cancerous cell proliferates at higher rate rather than the other cells to some extent this abomination will outnumber the normal cell. Thus, the normal cells will be rendered incapable to compete with the cancer cell in obtaining appropriate nourishment from the blood stream and eventually, the tumor cells will displace healthy cells (Peppas, Brannon-Peppas, & Blanchette, 2012).

Over two decades of research, numerous evidences pointed out oxidative stress being a culprit behind chronic disease development including cancer. Oxidative stress occurs when there is imbalance between the production of free radicals and reactive