

**UNIVERSITI TEKNOLOGI MARA**

**QUALITATIVE ANALYSIS OF BANANA SOFT PITH CRUDE  
EXTRACT ANTI-PROLIFERATIVE PROPERTIES AGAINST  
HUMAN COLORECTAL ADENOCARCINOMA CELL LINES**

**(HT 29)**

**BY AO/PI STAINING AND TEM SCANNING**

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## ABSTRACT

Colorectal cancer (CRC) is one of the worldwide killer diseases. Several treatments have been implemented to treat cancer patients such as chemotherapy and surgical. Nevertheless, the side effects from the treatment causing the patients to possibly suffer low quality of life as the outcome. Previous study of BSP crude extract against Human Colorectal Adenocarcinoma Cell lines (HT 29) showed the cytotoxic effect of BSP crude extract. In this study, AO/PI and TEM method were used to observe the morphological changes of cell structure in treated samples. 6 different concentrations were used for AOPI staining technique which were 0, 50, 100, 500 and 1000 $\mu$ g/ml and incubated for 24, 48, 72 hours. Further verified by TEM method, IC<sub>50</sub> of BSP crude extract was used to treat CRC cells after 72 hours incubation. The results were able to verify the morphology changes of treated HT 29 such as membrane blebs, fragmented nuclei, cell shrink, chromatin condense, secondary necrosis and apoptotic body. In conclusion, BSP crude extract was found to induce apoptotic features of HT 29 cell lines.

# CHAPTER 1

## INTRODUCTION

### 1.1 Background of Study

Cancer developed from cell anomaly typically can be seen in neoplasia. Neoplasia is an abnormal accumulation of cells that occurs because of imbalance between cellular proliferation and cellular abrasion. Cells undergo proliferation through cell cycle and undergo abrasion when it is programmed to death (Balogh *et al.*, 2011). The oncogenesis occurred when there is mutation in gene that responsible to regulate cell growth and cell death. On top of that, the abnormal cells are further recognized as dangerous when they acquired the ability to invade locally and capability to metastasize to distant sites (Chaffer & Weinberg, 2011). The most fatal cancer is metastasis cancer. The malignant cells from the origin will migrate to the neighbour site resulting in the invasion of malignant cells to the parenchymal tissue and penetration to the vascular and lymphatic channels (Alitalo, 2011).

Cancer is one of the worldwide death diseases. It is estimated to cause death about more than 7 million people around the world. Based on the data collected from (Jemal *et al.*, 2011), colorectal cancer (CRC) is the fourth highest cancer diagnosed