

Anti-cancer activity of *Luvunga scandens* extracts against human malignant melanoma cells

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Abstract

Human malignant melanoma cells are characterized by abnormalities in cell differentiation and growth. Skin cancer is reported as one of the most common types of cancer with increasing numbers of occurrence. *Luvunga scandens* (*L. scandens*) is one of the medicinal plants found in Malaysia. This plant is known to possess many bioactivities and general health effects, yet its anti-proliferative effect is generally under reported and need to be scientifically evaluated. The aim of this study is to evaluate the anti-proliferative and apoptotic effects of *L. scandens* plant extract against human malignant melanoma cell line. 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT assay) was used to test the cytotoxicity effect caused by *L. scandens* on malignant melanoma cells, in addition to measuring the safety levels of *L. scandens* against normal cell lines (HaCaT and HDF). Scratch assay was carried out to monitor the cell growth. The morphological changes of *L. scandens* treated malignant melanoma cells was confirmed by scanning electron microscopy, and the apoptotic effect of the plant against malignant melanoma cells was tested using caspase 3/7 assay, followed by cell cycle analysis done using a flow-cytometer on skin cancer cells treated *L. scandens* plant. The results showed that the extracts (Methanol, Dichloromethane, Hexane) possess cytotoxic effect against skin cancer cells, and no cytotoxic activity on both HaCaT and HDF cells. The scanning electron microscopy results demonstrate that *L. scandens* treated cells showed overall changes in the cell shape, alteration of surface morphology, absence of microvilli and appearance of blebs. Caspase 3/7 assay results showed that *L. scandens* dichloromethane (DCM) extract exhibited the highest level of apoptosis against malignant melanoma cells. For cell cycle analysis, the *L. scandens* treated malignant melanoma cells show high readings in the sub-G₁ phase. This *in vitro* study has proven that *L. scandens* plant extract exhibit anti-proliferative effects against human malignant melanoma cell line, hence, it can be considered as a new promising potential anti-cancer therapy.

Keywords: Luvunga scandens; MTT; SEM

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