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The Cytotoxic Effect of Cananga Odorata (CO) Essential Oil on Skin Cancer is not via TP53 Gene Expression Modulation

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Introduction: Skin cancer is one of the most common cancers worldwide. *Cananga odorata* (CO) essential oil (EO) has been reported to have anticancer and antioxidant properties. Hence, it may have the potential to be used as a topical treatment for skin cancer. The aim of this study is to assess the cytotoxic effect of CO EO on skin cancer, the pro-apoptotic *TP53* gene expression, and its protein (p53) secretion. **Materials and Methods:** A431 squamous skin cancer cells and HFF1 fibroblast cells were treated with CO EO at 125, 250, and 500 µg/ml for 24 h. Their morphology was observed at 20-40x magnification. *TP53* gene expression in these cells was examined by real-time PCR. p53 protein secretion in the conditioned media was assessed using western blot. **Results:** CO EO treated A431 cells exhibited loss of cellular margin and higher non-viable cells at all concentrations. Meanwhile, HFF1 cells treated with 125 µg/ml CO EO showed no significant changes. At 250 and 500 µg/ml, there was no significant changes in *TP53* gene expression in A431 cells, but higher p53 protein secretion was observed. **Conclusion:** Our findings suggest that CO EO was cytotoxic to skin cancer at 250 and 500 µg/ml without augmenting *TP53* gene expression. Hence, further investigations into CO EO effect on other apoptotic or anti-proliferative regulatory genes are required to establish its underlying molecular mechanism leading to its cytotoxic effect in skin cancer.

Keywords: Carcinogenesis; flower essences; gene expression regulation; post-transcriptional RNA processing; *ylang ylang*