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The Effect of Citrus Limon and Cananga Odorata Essential Oils on NOTCH1 Signalling in Normal Skin and Skin Cancer Cells

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PURPOSE: The aim is to investigate the antiproliferative effects of CL and CO EO on skin cancer cells via NOTCH1 gene expression and protein secretion.

METHODS: A431 (human squamous carcinoma) cell lines were treated with DMSO-dissolved cisplatin, and 125, 250 and 500 µg/ml CL or CO EO for 24 hours. The morphology of the cells was recorded under 20–40x magnification. Quantitative Real-Time Polymerase Chain Reaction (qRT-PCR) and western blot were performed from isolated mRNA and protein extraction from conditioned media respectively.

RESULTS: The cells showed similar morphology after treatment with cisplatin and 125 µg/ml CL and CO EO. NOTCH1 gene expression was downregulated among cells supplemented with 125 µg/ml CO EO as compared to those treated with cisplatin. Whereas the expression was upregulated among cells treated with 125 µg/ml CL EO. Meanwhile, protein secretion from treated A431 cells revealed upregulation of NOTCH1 at higher concentrations of EOs.

CONCLUSION: Although there are no remarkable morphological changes among treated cells, it shows a promising antiproliferative effect of CO EO than cisplatin and CL EO towards cancer cells molecularly. Possible crosstalk from skin cancer cells to their surroundings needs further study to determine the outcome of this cell signalling.

Keywords: Citrus limon, Cananga odorata, essential oil, skin cancer, NOTCH1
