

Induction of Cytotoxicity and Apoptosis in Ovarian Cancer Cell Line (CAOV-3) by an Isoquinoline Alkaloid Isolated from *Enicosanthellum pulchrum* (King) Heusden

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Abstract : *Enicosanthellum pulchrum* belongs to family Annonaceae is also known as family of 'mempisang' in Malaysia. Liriodenine was isolated by prep-HPLC method. This method was first technique used for the isolation of this compound. The structure of the liriodenine was elucidated by 1D and 2D spectroscopy techniques. Liriodenine was tested on ovarian cancer cells line (CAOV-3) for MTT, AO/PI and cytotoxicity 3 assays. The MTT assay was performed to determine the cytotoxicity effect of liriodenine on CAOV-3 cells. The morphological changes on CAOV-3 cells were observed by AO/PI assay for the early and late stage of apoptosis, as well as necrosis. Meanwhile, the measurement of cell loss, nuclear morphology, DNA content, cell membrane permeability, mitochondrial membrane potential changes and cytochrome c release from mitochondria were detected through cytotoxicity 3 assay. The IC50 results showed liriodenine inhibits the growth of CAOV-3 cells after 24 h of treatment at $10.25 \pm 1.06 \mu\text{g/mL}$. After 48 and 72 h of treatments, the IC50 values were decreased to 7.65 ± 0.07 and $6.35 \pm 1.62 \mu\text{g/mL}$, respectively. The morphology changes can be seen on CAOV-3 with a production of cell membrane blebbing, chromatin condensation and apoptotic bodies with increasing time of treatment from 24 to 72 h. Evaluation of cytotoxicity 3 on CAOV-3 cells after treated with liriodenine, resulting loss of mitochondrial membrane potential and release of cytochrome c from mitochondria. The results demonstrated the capability of liriodenine as a promising anticancer agent, particularly on human ovarian cancer.

Keywords : *Enicosanthellum pulchrum*, ovarian cancer, apoptosis, cytotoxicity

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