

中文題目：4-methoxycinnamaldehyde: Topoisomerase 1 & 2 之新小分子抑制劑

英文題目：4-methoxycinnamaldehyde: A novel small molecule inhibitor of both topoisomerase 1 & 2

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**Background:** *Cinnamomum verum*, also named true cinnamon tree, is used to manufacture the seasoning cinnamon. In addition, the plant has been used as a traditional Chinese herbal medication.

**Methods:** We investigated the anticarcinogenic activity of 4-methoxycinnamaldehyde (4-MCA), an ingredient of the cortex of the tree, and the molecular markers associated with cancerogenesis in T-lymphoblastic MOLT-3 cells. The effects of 4-MCA on cell proliferation, cytotoxicity, apoptosis, topoisomerase I together with II activities in MOLT-3 cells were investigated *in vitro*.

**Results:** The results demonstrate that 4-MCA suppressed proliferation and induced apoptosis as implicated by decrease mitochondrial membrane potential, upregulation of both caspase-3 and -9, together with the DNA content in sub G1, and morphological characteristics of apoptosis. Furthermore, 4-MCA also induced lysosomal vacuolation with increased volume of acidic compartment, cytotoxicity, and inhibition of activities of both topoisomerase I and II. **Conclusion:** Our results implicate that the anti-carcinogenic activity of 4-MCA *in vitro* involved downregulation of cell growth markers, activities of both topoisomerase I together with II, and increase of pro-apoptotic molecules, associated with increased lysosomal vacuolation. Furthermore, similar effects were observed in other tested cell lines (results not shown). In short, our data suggest that 4-MCA could be a drug for chemopreventive and/or anti-cancerogenesis therapy.