Kantima Choosang 2011: Evaluation of Natural and Synthetic Compounds in Human Tumour Cell Lines: Effects on Cell Growth, Cell Cycle and Apoptosis. Doctor of Philosophy (Bioscience) Major Field: Bioscience, Interdisciplinary Graduate Program. Thesis Advisor: Associate Professor Pannee Pakkong, M.S. 104 pages.

Fifty natural and synthetic compounds of xanthones, terpenes and flavonoids were evaluated for their capacity to inhibit the growth of three carcinoma cell lines, NCI-H460 (non-small cell lung cancer), MCF-7 (breast adenocarcinoma) and A375-C5 (melanoma). Initial elucidation of the mechanisms involved in the cell growth arrest of the most potent compounds was carried out by verifying their effect in cell cycle profile and apoptosis. The results showed that one triterpene (odoratol) and two limonoids (gedunin and cedrelone) caused cell cycle arrest. In addition, analysis of apoptosis indicated that triterpene odoratol and limonoid 6α-acetoxy-14β,15β-epoxyazadirone cause a very small increase in cell death while limonoid gedunin and particularly cedrelone, are very potent inducers of programmed cell death.

In conclusion, limonoid cedrelone is very potent by causing cell cycle arrest and apoptosis, which makes it a very interesting compound for further studies in order to investigate its full potential as antitumour agent.

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