

EVALUATION OF ANTI-METASTATIC EFFECT OF *GANODERMA LUCIDUM* EXTRACTS ON CULTURED MAMMALIAN CANCER CELLS

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Background: *Ganoderma lucidum* is a popular medicine mushroom that has been used as an herbal medicine for promoting vitality and longevity in China and many Asian countries. It has been also used for the prevention or treatment of a variety of diseases including cancer.

Purpose: In this study, we would investigated the effect of methanol and water extracts from *G. lucidum* underlying anti-cancer and anti-metastatic activities on three cancer cells, human mammary carcinoma; MCF-7, human cervical carcinoma; HeLa and human carcinoma of the floor of mouth; KB.

Methods: The anticancer activity was undertaken with a total cell protein determination method. The anti-invasion and anti-motility potential were evaluated using Matrigel-invasion assay and anti-motility assay, respectively. These results were expressed by median effective dose (ED₅₀ or IC₅₀). And semi-quantitative RT-PCR technique was performed to evaluated MMP-2 and MMP-9 mRNA expression. The relative intensity of PCR product from *MMP-2* and *MMP-9* gene were quantified and normalized with house-keeping gene; *β-actin*.

Results: Our research indicated that, the methanol and water extracts from *G. lucidum* showed the proliferation inhibitory effect on three cultured mammalian cancer cells. They has been also exhibited a potential anti-metastatic activity by inducing anti-invasion and anti-motility in a dose-dependent fashion. Moreover, both of these extracts were down-regulation of *MMP-2* and *MMP-9* genes by decreasing of MMP-9 mRNA and slightly decreased of MMP-2 mRNA on three cancer cell lines.

Conclusion: All our finding demonstrated that the methanol and water extracts from *G. lucidum* exhibited anti-cancer and anti-metastatic activities. They are promising for further investigation on cellular and molecular levels. In addition, further studies on pre-clinical and clinical with *G. lucidum* are necessary for the validation of this herbal medicine in cancer prevention and therapy of cancer.