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Ganoderma lucidum extract induces cell cycle arrest and Apoptosis in MCF-7 human breast cancer cell

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Although the pharmacology and clinical application of water extracts of *Ganoderma lucidum* have been extensively documented, little is known regarding its alcohol extract. In the present study, the anti-tumor effect of an alcohol extract of *Ganoderma lucidum* was investigated using MCF-7 cells. We found that the alcohol extract of *Ganoderma lucidum* inhibited cell proliferation in a dose- and time- dependent manner, which might be mediated through up-regulation of p21/Waf1 and down-regulation cyclin D1. Furthermore, this compound can directly induce apoptosis in MCF-7 cells, which might be mediated through up-regulation of a pro-apoptotic Bax protein, not by immune system. Our finding suggests that multimechanism underlying the anti-tumor effects of *Ganoderma lucidum*.

Keyword : *Ganoderma lucidum*, MCF-7, cell-cycle arrest, apoptosis