Latin American Journal of Pharmacy
(formerly *Acta Farmacéutica Bonaerense)*
Lat. Am. J. Pharm. **31** (1): 43-50 (2012)

Regular Article
Received: November 15, 2011
Revised version: January 10, 2012
Accepted: January 10, 2012

Anti-Proliferation and Induced Mitochondria-Mediated Apoptosis of Ganoderic Acid Mk From *Ganoderma lucidum* Mycelia in Cervical Cancer HeLa Cells

Ru-Ming LIU [1]*, Ying-Bo LI [1], Jian-Jiang ZHONG [1,2]*

[1] *State Key Laboratory of Bioreactor Engineering, School of Bioengineering, East China University of Science and Technology, 130 Meilong Road, Shanghai 200237, China.*

[2] *State Key Laboratory of Microbial Metabolism, and Laboratory of Molecular Biochemical Engineering, School of Life Sciences and Biotechnology, Shanghai Jiao Tong University, 800 Dong-Chuan Road, Shanghai 200240, China.*

***SUMMARY*. Ganoderic acid Mk (GA-Mk), a triterpenoid acid, was isolated from the mycelia of *Ganoderma lucidum,* and no biological activity of GA-Mk has ever been reported. In this work, we investigated the effect of GA-Mk on the cell proliferation and apoptosis in HeLa cells. The MTT results demonstrated that GA-Mk displayed interesting cytotoxicity toward various human cancer cell lines. Bromodeoxyuridine (BrdU) incorporation assay showed that GA-Mk had a dose-dependent inhibitory effect on proliferation of HeLa cells. The flow cytometry analysis indicated that the treatment of HeLa cells with GA-Mk increased the rate of early and late apoptotic cells in a dose-dependent manner. Furthermore, GA-Mk inducing apoptosis was in association with the burst of intracellular reactive oxygen species (ROS), the decrease of the mitochondrial membrane potential and the increase of caspase-3 and caspase-9 activities. These results demonstrated that GA-Mk was efficiently anti-proliferative and could induce apoptosis of HeLa cells by mitochondria-mediated pathway, and it may serve as a promising candidate for the treatment of cervical cancer.**

KEY WORDS: Anti-proliferation, Apoptosis, Ganoderic acid Mk (GA-Mk), HeLa cells, Mitochondria.

* Authors to whom correspondence should be addressed. *E-mails:* lrm407@126.com (R.-M. Liu), jjzhong@sjtu.edu.cn (J.-J. Zhong).