Triterpenoid Extract from Ganoderma Lucidum Induces Apoptosis in Caco-2 Human Colon Carcinoma Cells

by Ms. Ruan Weimei

FST Seminar Announcement

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Host: A/P Huang Dejian
Date: 1st Apr 2013, Mon
Time: 1 to 2pm
Venue: Seminar Room, S14-06

Abstract

Ganoderma lucidum (also known as Lingzhi in Chinese) is a medicinal mushroom that has been used as a folk remedy for centuries in ancient Asia. It has been reported to possess diverse health promoting properties. Triterpenoids from Ganoderma lucidum have become a research focus in recent years due to its potent anti-cancerous effects. In this study, a bioassay-guided approach was applied to investigate the bioactivity of Ganoderma lucidum extracts in cultured human carcinoma cells. Two triterpenoid-enriched fractions from an ethanolic extract of Ganoderma lucidum isolated by flash chromatography were found cytotoxic to Caco-2 human colon carcinoma cells in a dose dependent manner. The less polar fraction (fraction 3) was more toxic with a lower LC50 while the more polar fraction (fraction 2) had a higher LC50. Cell cycle analysis further indicated fraction 3 induced a significant accumulation of sub- G1 cells while fraction 2 only caused a G2/M arrest. Fraction 3 treatment also showed positive results in the terminal deoxynucleotidyl transferase dUTP nick end labeling (TUNEL) assay and caspase apoptotic assay. Chemical analysis indicated that fraction 2 contained ganoderic acids ζ, A, B, C2, C6, D, G, H, I, K and ganoderenic acids D and K, all with presence of an oxyl group at position C11 and oxyl or hydroxyl groups at position C23. Fraction 3 contained lucidumol A, ganodermic acid Jb, ganoderic acid DM, and ganoderic aldehyde TR, none of which has functional groups at C11 and C23. The variation of chemical structures and polarity between the two groups of compounds are likely result in the different corresponding effects on Caco-2 cells.

About the speaker

Ms. Ruan Weimei received her bachelor degree in Food Science and Engineering from South China University of Technology in 2009. After that she was awarded the NUS graduate research scholarship and began her postgraduate studies in NUS-SFT program. Ms. Ruan was currently a Ph.D candidate under the supervision of Assistant Professor David Glen Popovich. Her work is focusing on the chemical and bioactive characterization of Ganoderma lucidum.