

International Conference and Exhibition on

# Marine Drugs and Natural Products

July 25-27, 2016 Melbourne, Australia

## Macranthoside B induces apoptosis and autophagy via reactive oxygen species accumulation in human ovarian cancer A2780 cells

Yu Shan, Huan Li, Fuqin Guan, Xingzeng Zhao and Xu Feng  
Jiangsu Province and Chinese Academy of Sciences, China

*Lonicera macranthoides* Hand.-Mazz., from the family Caprifoliaceae, is commonly used in traditional Chinese medicine and used for brewing tea to allay fever and neutralize toxins. Macranthoside B (MB), a hederagenin saponin extracted from the flower buds of *L. macranthoides*, can block cell proliferation and induce cell death in several types of cancer cells; however, the precise mechanisms by which MB exerts its anti-cancer effects remain poorly understood. MB blocked A2780 human ovarian carcinoma cell proliferation both dose and time dependently. MB induced apoptosis with increased poly (ADP-ribose) polymerase (PARP) and caspase-3/-9 cleavage. MB also caused autophagy in A2780 cells with light chain 3 (LC3)-II elevation. Inhibiting MB induced autophagy with the autophagy inhibitor 3-methyladenine (3-MA) significantly decreased apoptosis with a reduction of growth inhibition; inhibiting MB induced apoptosis with the pan-caspase inhibitor Z-VAD-FMK did not decrease autophagy but elevated LC3-II levels indicating that MB induced autophagy is cytotoxic and may be upstream of apoptosis. Furthermore, MB increased intracellular reactive oxygen species (ROS) levels with activated 5' adenosine monophosphate activated protein kinase (AMPK), decreased mammalian target of rapamycin (mTOR) and P70S6 kinase phosphorylation, increased PARP and caspase-3/9 cleavage and LC3-II elevation; treatment with the ROS scavenger N-acetyl cysteine (NAC) and the AMPK inhibitor Compound C diminished this effect. Therefore, the ROS/AMPK/mTOR pathway mediates the effect of MB on induction of apoptosis via autophagy in human ovarian carcinoma cells. Overall, our findings suggest that MB has potential as a chemotherapeutic agent for ovarian cancer by targeting ROS/AMPK/mTOR signaling.

### Biography

Yu Shan has completed his PhD from Nanjing Agriculture University and Visiting Scholar studies from Pennsylvania State University College of Medicine and Milton S. Hershey Medical Center. He is the Associate Professor and Vice Director of Research Center for Natural Products Chemistry, Institute of Botany, Jiangsu Province and Chinese Academy of Sciences. He has published more than 50 papers in reputed journals and 3 academic books.

[attilayu@hotmail.com](mailto:attilayu@hotmail.com)

### Notes: