Srishti Mishra, Curr Synthetic Sys Biol 2017, 5:2 (Suppl)
DOI: 10.4172/2332-0737-C1-011

The potential molecular targets of Fangchinoline for cancer therapy

Srishti Mishra
Yong Loo Lin School of Medicine, National University of Singapore, Singapore

Background: Fangchinoline, a traditional Chinese medicine, is a bis-benzylisoquinoline alkaloid isolated from the dried root of *Stephaniae tetrandrine* S. Moore (family-Menispermaceae). It has been extensively used as an analgesic, anti-rheumatic and anti-hypertensive drug, possesses profound pharmacological activities and has gained a lot of interest due to its anti-cancer activity.

Aim: This project aimed to investigate the potential anti-cancer effects of Fangchinoline in tumor cells and to identify the molecular targets underlying its mechanisms of action.

Methods: The hepatocellular carcinoma cells and breast cancer cells were chosen to assess the effects of Fangchinoline on the cellular cytotoxicity, cell cycle progression, apoptosis and the migratory and invasive potential of these cells by MTT assay, flow cytometry, western blotting, wound healing assay and the invasion assay, respectively.

Results: Fangchinoline showed significant cytotoxic effects on Huh-7 and MDA MB-231 cell lines. It arrested these cells at the sub-G1 phase of the cell cycle, induced significant apoptosis in both the tumor cells as evidenced by the activation of procaspase-3, the cleavage of PARP and downregulation of Bcl-2. Additionally, it also attenuated the migratory and invasive potential of both the cell lines significantly. The suppression of the phosphorylated AKT protein level was also observed upon the drug treatment.

Conclusion: Overall, the preliminarily results shows that Fangchinoline exerts significant anti-cancer effects on the tumor cells predominantly via the inhibition of the AKT signaling cascade.

Biography

Srishti Mishra has completed Genetic Engineering degree from SRM University, Chennai, India. She is a Research Assistant in the Department of Pharmacology at National University of Singapore and she has published 4 papers in reputed journals and has been engaged in mentoring the students in their research projects.

phcsrm@nus.edu.sg

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