

## Anti-Cancer Effects of a Two-Herb Chinese Medicine Formula, Zuo-Jin-Wan, and Its Alkaloidal Components in HepG2 Cells and in an Intrahepatic Xenograft Mouse Model

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### Background & Aim :

Zuo-Jin-Wan (ZJW) is a two-herb Chinese medicine formula. We investigated anti-cancer effects of ZJW, its components *Coptis chinensis* (CC) and *Evodia rutaecarpa* (ER), and their corresponding major alkaloidal components (berberine and evodiamine) in human hepatoma HepG2/NF-kB/Luc cells and in an intrahepatic xenograft mouse model.

### Materials & Methods :

MTT assay and cDNA microarray analysis were performed on cells treated for 48 hours. A human hepatoma xenograft model was established in immunocompetent ICR mice by intrahepatic injection of HepG2/NF-kB/Luc cells.

### Results :

ZJW, CC, ER, berberine, and evodiamine significantly inhibited cell proliferation in a dose- and time-dependent manner. Hierarchical cluster analysis of differentially expressed genes revealed that CC and ZJW displayed a similar gene expression profile. Network analysis of genes regulated by ZJW suggested that c-myc plays a critical role. Three days after tumor cell implantation to mice, *in vivo* bioluminescence imaging analysis revealed that cells had successfully been transplanted in mouse liver with acceptable variation. Seven daily treatments with ZJW (200 mg/kg, gavage) showed a significant decrease in accumulation of ascites fluid and in the ratio of xenograft tumor weight to liver weight, further confirmed by immunohistochemical staining of NF-kB in liver.

### Conclusion :

ZJW significantly suppressed cancer cell growth *in vitro* and in HepG2/NF-kB/Luc-bearing mice.

### Keywords:

hepatoma; Chinese medicine; Zuo-Jin-Wan; anti-cancer effects; intrahepatic xenograft mouse model