

# **Cytotoxic Effects of *Angelica acutiloba* and *Salvia miltiorrhiza* Extracts on Human Cancer Cell Lines<sup>1</sup>**

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## Abstract

Various combinations of *Angelica acutiloba* and *Salvia miltiorrhiza* extracts produced by GAP cultivation system in Hualien were confirmed in this study to inhibit the cancer cells proliferation in vitro. Those extracts with ethanol at 80°C produce the highest content of active ingredients and inhibit the growth of MCF-7, MSG2 and A549 cell lines, and when combined with cisplatin can inhibit the proliferation of HepG2 cell line. Treated with combined extracts of 457  $\mu\text{g}\cdot\text{ml}^{-1}$  *Angelica* and 40  $\mu\text{g}\cdot\text{ml}^{-1}$  *Salvia* extract, cancer cell survival rate is 20%. Treatment of 457  $\mu\text{g}\cdot\text{ml}^{-1}$  *Angelica* extract and 5  $\mu\text{g}\cdot\text{ml}^{-1}$  cisplatin, the cancer cell survival rate is 10.9%. The combined treatment of 40  $\mu\text{g}\cdot\text{ml}^{-1}$  *Salvia* extract and 5  $\mu\text{g}\cdot\text{ml}^{-1}$  cisplatin resulted in 50% cancer cell survival. Combined with all three, it resulted in 31% cancer cell survival. This study provides evidence that when combining active ingredients of *Angelica acutiloba* and *Salvia miltiorrhiza* with chemotherapeutic agent cisplatin, it inhibits HepG2 cell line that can be used in future anticancer and pharmacokinetic research, benefit the application of synergistic combination to reduce the side effects of chemotherapy drugs. There are potential applications in the development of functional food and herbal medicine in the future.

Key words: *Angelica acutiloba*, *Salvia miltiorrhiza*, active ingredient, anticancer, cisplatin.

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