

Anti-Cancer Effect of *Angelica Sinensis* on Women's Reproductive Cancer

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ABSTRACT:

Objective: Danggui, the root of *Angelica Sinensis*, has traditionally been used for the treatment of women's reproductive disorders in China for thousands of years. This study was to determine whether Danggui have potential anti-cancer effect on women's cancer and its potential mechanism.

Methods: Danggui was extracted by ethanol. The Cell Titer 96® Aqueous Non-Radioactive Cell Proliferation Assay was used to compare the effects of Danggui on human breast (MCF-7 and 7368) and cervical (CaSki and SiHa) cancer cells with its effects on normal fibroblasts (HTB-125). A revised Ames test was used to test for antimutagenicity. The standard strains of *Salmonella typhimarium* (TA) 100 and 102 were used in the test. Methyl methane sulfonate (MMS) and UV light were used as positive mutagen controls and ethanol and double distilled water (DDW) as controls. The SAS statistical software was used to analyze the data.

Results: Danggui was found to be much more toxic to all cancer cell lines tested than to normal fibroblasts. There was a significant negative dose-effect relationship between Danggui and cancer cell viability. Average viability of MCF-7 was 69.5%, 18.4%, 5.7%, 5.7%, and 5.0% of control for Danggui doses 0.07, 0.14, 0.21, 0.32, and 0.64 ug/ul, respectively, with a $P_{\text{trend}} < 0.0001$. Half maximal inhibitory dose (ID₅₀) of Danggui for cancer cell lines MCF-7, CaSki, SiHa and CRL-7368 was 0.10, 0.09, 0.10 and 0.07 ug/ul,

respectively. For the normal fibroblasts, ID_{50} was 0.58 ug/ul. At a dose of 0.32 ug/ul, Danggui killed over 90% of the cells in each cancer cell line, but at the same dose, only 12.3 % of the normal HTB-125 cells were killed. Revertants per plate of TA 100 decreased with the introduction of increasing doses of Danggui extracts with a $P_{trend} < 0.0001$ when UV light was used as a mutagen. There was no difference in revertants per plate between ethanol and DDW control groups.

Conclusions: Danggui could be used as a safe and effective adjuvant therapy to prevent and treat breast and cervical cancers. Anti-cancer effects may be due to its anti-mutagenicity. Danggui should be investigated as a potential adjuvant anti-cancer therapy for women's cancer treatment and prevention of recurrence.

Key words: *Angelica Sinensis*, Danggui, cancer, women's reproductive disorders