Biosynthesis and anticancer effects against colon cancer cells of silver nanoparticles using *Jurenia macrocephala* DC. whole extract

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Metal nanoparticles, particularly silver nanoparticles (AgNPs), are developing more important roles as diagnostic and therapeutic agents for cancers with the improvement of eco-friendly synthesis methods. This study demonstrates the biosynthesis, antibacterial activity, and anticancer effects of silver nanoparticles using *Jurenia macrocephala* DC. (Family *Compositae*) whole aqueous extract. The AgNPs were characterized by UV-vis absorption spectroscopy, X-ray diffraction (XRD), scanning electron microscopy (SEM), and Fourier transform infrared spectroscope (FTIR). The cytotoxicity effect was explored on human colon cancer cells *in vitro* by MTT assay. The expressions of phosphorylated stat 3, bcl-2, survivin, and caspase-3 were examined by Western blot analysis. The whole extract acted as a strong reducing and stabilizing agent during the synthesis. AgNPs also showed dose-dependent cytotoxicity against colon cancer cells through a decrease of stat 3, bcl-2, and survivin, as well as an increase in caspase-3. These findings confirm the potential anticancer application of AgNPs for colon cancer therapy. Further research should be focused on the comprehensive study of molecular mechanism and *in vivo* effects on the colon cancer.