Induction of apoptosis in human cervical carcinoma HeLa cells with active components of *Menispermum dauricum*

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ABSTRACT. *Menispermum dauricum* DC possesses a wide range of pharmacological effects. In this study, the mechanism of apoptosis induced by active components of *M. dauricum* was investigated in the human cervical carcinoma HeLa cell line. HeLa cells were treated with different *M. dauricum* concentrations over different time periods. The proliferation-inhibitory rate and cytotoxic effect of HeLa cells were measured by using the methyl thiazolyl tetrazolium (MTT) assay, and the apoptotic rate was detected by flow cytometry. Expressions of caspase-9, caspase-8, caspase-3, Bcl-2, and Fas proteins, in the apoptotic pathway, and the expression of nuclear factor-kappa B (NF-κB) were detected by SP immunocytochemistry. The MTT assay showed that active components of *M. dauricum* could significantly inhibit the growth of HeLa cells in a dose- and time-dependent manner (P < 0.01). The Sub-G₁ peak was found by flow cytometry, and the maximal apoptosis rate was 24.93%. Immunocytochemistry showed that after treatment with *M. dauricum*, the expressions of caspase-8, caspase-9, caspase-3, Fas protein, and NF-κB all increased, and the expression of
the Bcl-2 protein decreased, with significant differences relative to the control group ($P < 0.01$). Apoptosis in HeLa cells could be induced by active components of *M. dauricum* through the NF-κB signal transduction pathway and the caspase pathway, which was related to the downregulation of Bcl-2 expression and the upregulation of Fas expression.

**Key words:** *Menispermum dauricum*; HeLa cells; Apoptosis; Mechanism