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Enhanced TRAIL-mediated apoptosis in prostate cancer cells by the bioactive compounds neobavaisoflavone and psoralidin isolated from *Psoralea corylifolia*

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Abstract:
Numerous compounds detected in medical plants and dietary components or supplements possess chemopreventive, antitumor and immunomodulatory properties. Tumor necrosis factor-related apoptosis-inducing ligand (TRAIL) is an important endogenous anticancer factor that induces apoptosis selectively in cancer cells. However, some tumor cells are resistant to TRAIL-mediated apoptosis. Naturally occurring agents could sensitize TRAIL-resistant cancer cells and augment their apoptotic activity. We examined the cytotoxic and apoptotic effects of neobavaisoflavone and psoralidin in combination with TRAIL on LNCaP prostate cancer cells. The cytotoxicity was evaluated by MTT and LDH assays. The apoptosis was detected using Annexin V-FITC by flow cytometry and fluorescence microscopy. The LNCaP cells were shown to be resistant to TRAIL-induced apoptosis. Our study demonstrated that neobavaisoflavone and psoralidin sensitized TRAIL-resistant cells and markedly augmented TRAIL-mediated apoptosis and cytotoxicity in prostate cancer cells. Cotreatment of LNCaP cells with 100 ng/ml TRAIL and 50 μM neobavaisoflavone or 50 μM psoralidin increased the percentage of the apoptotic cells to 77.5 ± 0.5% or 64.4 ± 0.5%, respectively. The data indicate the potential role of the bioactive compounds isolated from the medicinal plant *Psoralea corylifolia* (neobavaisoflavone and psoralidin) in prostate cancer chemoprevention through enhancement of TRAIL-mediated apoptosis.

Key words:
neobavaisoflavone, psoralidin, TRAIL, apoptosis, prostate cancer