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Apoptosis of human prostate androgen-dependent and -independent carcinoma cells induced by an isopropanolic extract of black cohosh involves degradation of cytokeratin (CK) 18.

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Abstract

BACKGROUND: The inhibitory effects of black cohosh extracts (Cimicifuga syn. Actaea racemosa L.) on the proliferation of human breast cancer cells were reported recently. In this study, we turned examined another hormone-dependent, epidemiologically important tumor disease, prostate cancer. The cell growth inhibitory effect of an isopropanolic extract of black cohosh (iCR) on androgen-sensitive LNCaP and androgen-insensitive PC-3 and DU 145 prostate cancer cells was investigated.

MATERIALS AND METHODS: The cytotoxic effect of the extract was determined by WST-1 assay. Apoptosis was determined by the appearance of apoptotic morphology, annexin V-FITC adherence and caspase activation. Cytokeratin (CK) 18 degradation was identified with M30 monoclonal antibody.

RESULTS: Regardless of their hormone sensitivity, the growth of prostate cancer cells was significantly and dose-dependently down-regulated by iCR. The drug concentration producing 50% cell growth inhibition in all cell lines after 72h lay between 37.1 and 62.7 microg/ml. Increases in the level of M30 antigen of approximately 1.8-, 5.9- and 5.3-fold over untreated controls were observed in black cohosh-treated PC-3, DU 145 and LNCaP cells, respectively, with the induction of apoptosis being dose- and time-dependent.

CONCLUSION: Black cohosh extract kills human hormone-responsive or-unresponsive prostate cancer cells by induction of apoptosis and activation of caspases. This finding suggests that the cell's hormone responsive status is not an important determinant of the response to the extract and that iCR extract may represent a novel therapeutic approach for the treatment of prostate cancer.

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