Correction of malignant behavior of tumor cells by traditional Chinese herb medicine through a restoration of p53.

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Abstract

We have previously demonstrated that a UVC-induced tumorigenic HeLa x skin fibroblast cell line could be induced to form a more normal phenotypic state ('reversion'), including loss of IAP expression. We have now used the loss of IAP expression to monitor the enhancement of this reversion in the cervical cancer cell line, HeLa, by a traditional Chinese herb medicine (TCM), Yigan Kang (YGK). IAP level decreased, and the reversion frequency increased, in a dose-dependent manner at concentrations of YGK of more than 10 mg. YGK significantly repressed E6/E7 oncogenes at the transcriptional level, with subsequent reactivation of p53 and p21 expression ($P<0.01$). YGK had little effect on the cell cycle of HeLa cells and slightly increased the apoptotic cell death between 20 and 40 mg. In vivo, tumorigenicity studies were performed using six different animal experimental protocols, which demonstrated that YGK was effective at inducing reversion of the tumorigenic phenotype, with YGK-treated HeLa cells showing much less aggressive tumor growth than untreated cells. YGK may raise the possibility of the continuing management of some cancers as a chronic condition in which the malignant behavior of the tumor cells is constrained.