

Inhibitory effect of curcumin in human endometriosis endometrial cells via downregulation of vascular endothelial growth factor.

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Abstract

Endometriosis, which affects up to 10% of women of reproductive age, is defined as endometrial-like gland and stroma tissue growths outside the uterine cavity. Despite increasing research efforts, there are no current effective treatment methods for this disease, therefore investigations for therapeutic strategies are of primary concern. In preliminary work, the authors demonstrated that curcumin inhibits endometriosis in vivo. The present in vitro study aimed to investigate the association between endometriotic stromal cells and curcumin and to clarify the underlying mechanism of action. A total of 14 patients with endometriosis were enrolled in the present study. The purity of endometrial stromal cell cultures was proven by standard immunofluorescent staining of vimentin. The cell proliferation and curcumin effects on endometrial stromal cells were assessed by the MTT assay and Hematoxylin and Eosin staining. For cell cycle analysis, phase distribution was detected by flow cytometry. Vascular endothelial growth factor (VEGF) protein expression was examined using immunohistochemistry staining. Apoptosis was assessed using Annexin V-fluorescein isothiocyanate staining. The results indicated that the treatment of curcumin decreased human ectopic and eutopic stromal cell growth. Following treatment with curcumin, human endometriotic stromal cells demonstrated an increased percentage of G1-phase cells and decreased percentages of S-phase cells, particularly in the group treated with 50 $\mu\text{mol/l}$ curcumin. Treatment with curcumin additionally decreased expression of VEGF. The data provide evidence that curcumin reduces cell survival in human endometriotic stromal cells, and this may be mediated via downregulation of the VEGF signaling pathway.