

Abstract

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Suppression of tumor growth in xenograft model mice by programmed cell death 4 gene delivery using folate-PEG-baculovirus.

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BACKGROUND: Cancer gene therapy using tumor suppressor genes is considered to be an attractive approach for arresting cell growth and inducing apoptosis.

OBJECTIVE AND METHODS: Programmed cell death 4 (Pdc4) is a tumor suppressor gene, which prevents tumorigenesis and tumor progression. To address the issue of whether expression of PDCD4 protein induces apoptosis in cancerous cells, the Pdc4 gene was delivered using folate-PEG-baculovirus. Folate-PEG-baculovirus containing Pdc4 gene (F-P-Bac-Pdc4) was constructed by attachment of F-PEG to the baculovirus surface using chemical modification.

RESULTS: The F-P-Bac-Pdc4 showed enhanced transduction efficiency, efficiently expressed PDCD4 protein, and induced apoptosis in human epidermal carcinoma (KB) cells as compared with an unmodified baculovirus. In a tumor xenograft study, injection of F-P-Bac-Pdc4 into tumors established from the KB cell line by subcutaneous implantation significantly suppressed tumor growth and induced apoptosis.

CONCLUSION: Thus, this study shows a new baculovirus-mediated tumor suppressor gene delivery system for cancer therapy.

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