CpG ODN 1826 enhances radiosensitivity of the human lung cancer cell line A549 in a rat model

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ABSTRACT. This study investigated the effects of CpG ODN1826 plus radiotherapy (RT) on tumor growth and angiogenesis of subcutaneous tumor in a rat model. Four treatment groups were tested in which rats were injected with 100 µL CpG ODN1826 (1 µg/µL) or 100 µL vehicle, with and without exposure to 8 Gy after 2 h. At 7 days after inoculation of lung cancer cells, drugs were injected in the tumor and radiation was administered over 5 days, after which the rate of tumor inhibition was calculated. Expression of VEGF-C in tumor tissue was seen in 10, 50, 80, and 100% of tumors in the CpG ODN1826 + RT, CpG ODN1826, vehicle + RT, and vehicle alone groups, respectively, while positive expression of NRP-1 was seen in 10, 40, 90, and 100% of tumors. The decreases in expression of VEGF-C mRNA in the CpG ODN1826 + RT and CpG ODN1826 groups compared with the NS + RT and NS groups were significant (P < 0.01), as were the decreases in NRP-1 mRNA in the CpG ODN1826 + RT group compared with the CpG ODN1826 group (P < 0.01). Thus, CpG ODN1826 can significantly inhibit tumor growth in a rat model, the mechanism of which may be
related to inhibition of the expression of VEGF-C and NRP-1, which have an inhibitory effect on angiogenesis.

**Key words:** CpG ODN; Vascular endothelial growth factor-C; Neuropilin-1; Immunohistochemical staining