

**Effect of vitamin E and beta-carotene on DNA strand breakage induced by tobacco-specific nitrosamines and stimulated human phagocytes.**

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The tobacco-specific nitrosamines (TSNAs), nitrosonornicotine (NNN) and 4-(N-methyl-N-nitrosamino)-1-(3-pyridyl)-1-butanone (NNK), are metabolites of nicotine and are major carcinogens in cigarette smoke. Chronic inflammation may promote the carcinogenic effect of these nitrosamines through the generation of oxygen radicals. To evaluate the effect of oxygen radicals on TSNA-induced genetic damage, cultured human lung cells treated with NNN or NNK were exposed to stimulated human phagocytes and assayed for single-strand DNA breaks. TSNAs or stimulated phagocytes alone cause a significant increase in strand breakage which is augmented in an additive fashion when the two are combined. Pretreating the cells with vitamin E or beta carotene provided significant protection against the induction of DNA damage but vitamin E was significantly more effective than beta carotene. These data suggest a possible approach to the chemoprevention of tobacco-induced carcinogenesis.

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