Smokeless tobacco more effective than cigarettes for delivering dangerous carcinogens into the body

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It may not be inhaled into the lungs, but smokeless tobacco exposes users to some of the same potent carcinogens as cigarettes. In the August issue of *Cancer Epidemiology, Biomarkers & Prevention*, a journal of the American Association for Cancer Research, researchers at the University of Minnesota Cancer Center report that users of smokeless tobacco are exposed to higher amounts of tobacco-specific nitrosamines -- molecules that are known to be carcinogenic -- than smokers.

Smokeless tobacco, also known as oral snuff, is a variant on chewing tobacco that users suck on by slipping it between their cheeks and gums. In a study comparing 182 oral snuff users with 420 cigarette smokers, the Minnesota researchers found that snuff users were exposed to higher levels of 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK) than smokers. NNK is a human carcinogen known to produce lung cancer as well as cancers of the pancreas, nasal mucosa and liver in laboratory animals.

“Smokeless tobacco products have been proposed by some as safer alternatives to cigarettes, but they are not safe,” said author Stephen S. Hecht, Ph.D., professor of cancer prevention at the University of Minnesota Cancer Center. “The only likely safe alternative to smoking is the long term use of nicotine replacement therapy as a means to reduce dependence.”

“In fact, this study lends evidence to support the notion that the oral use of tobacco actually provides a more efficient means for delivering certain carcinogens into the body through the bloodstream, although cigarette smoke includes a host of carcinogenic products that aren’t a major factor in smokeless tobacco,” Hecht said.

The study participants included men and women aged 17 to 80 who had sought – but had yet to begin – treatment for tobacco addiction, and who used conventional, popular U.S. brands of smokeless tobacco. The researchers studied nitrosamine exposure by analyzing the urine of participants for NNAL, a biomarker for NNK exposure, as well as cotinine, a biomarker for nicotine. Hecht and his colleagues found that both cotinine and NNAL levels were higher in the urine of snuff users than smokers, when adjusted for age and gender.

According to Hecht, the nitrosamines found in tobacco, including NNK, are byproducts of the curing process involved in turning tobacco leaves into products like cigarettes, chew and snuff. While “low nitrosamine” smokeless tobacco products are available, including a Swedish-style product known as “snus,” these still contain NNK and other nitrosamines.

“American smokeless tobacco manufacturers are forbidden by federal law from claiming that smokeless tobacco is a safer alternative to smoking,” Hecht said. “That does not prevent them from advancing the general concept that snuff can be used as a substitute for cigarettes, especially in places, like an office setting, where snuff may be acceptable while smoking is not.”

Source: American Association for Cancer Research