

Nicotine addiction slashed in test of new cigarette smoking strategy

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Scientists are reporting the first successful strategy to reduce smokers' nicotine dependence while allowing them to continue smoking. The study provides strong support for proposals now being considered in Congress to authorize FDA regulation of cigarette smoking, according to the research team.

The key to the clinical trial's success was providing smokers with cigarettes of gradually decreasing nicotine content over a number of weeks. If such cigarettes were federally mandated, smokers would find it easier to quit, and more young smokers could avoid addiction, according to the scientists. Tobacco company products marketed as low-nicotine alternatives, in fact, do not change the level of nicotine taken in by smokers, they added.

The research was carried out by scientists at UCSF and San Francisco General Hospital Medical Center and is reported in the November 14 issue of the journal "Cancer Epidemiology, Biomarkers & Prevention."

Legislation giving the FDA authority to regulate tobacco products is currently being considered in Congress. Such regulatory authority would empower the agency to develop and enforce standards to make cigarettes less harmful -- including the reduction of the nicotine yields so that cigarettes would be less addictive, said Neal Benowitz, MD, leader of the study team and an expert on the pharmacology and health effects of nicotine and other smoking products.

Smoking and health experts have been concerned that reducing the nicotine content of cigarettes would lead to smoking a greater number of cigarettes and therefore increased exposure to other tobacco smoke toxins, as is seen in smokers of the currently marketed low-nicotine yield cigarettes, Benowitz said. The new research on reduced-nicotine content cigarettes strongly

counters that prediction. In the study, 20 healthy adult smokers smoked their usual brand for a week and then followed a six-week regimen of smoking cigarettes with progressively decreased nicotine content.

At the end of this period, they were free to return to their usual commercial cigarette brand, and most of them did. When tested one month later, they were smoking about 40 percent fewer cigarettes per day, with a comparable reduction in nicotine intake, compared to when the study began. Even more promising, one fourth of the smokers quit smoking entirely while the study was in progress, the researchers found.

"This study supports the idea that if tobacco companies were required to reduce the levels of nicotine in cigarette tobacco, young people who start smoking could avoid becoming addicted, and long-time smokers could reduce or end their smoking, Benowitz said.

"This could spare millions of people from the severe health effects of long-term smoking," he added.

Benowitz is a UCSF professor of medicine, psychiatry and biopharmaceutical sciences, and chief, Division of Clinical Pharmacology and Experimental Therapeutics at SFGH.

In 1994, Benowitz and colleague Jack Henningfield proposed in the "New England Journal of Medicine" that federal regulations should require cigarette manufacturers to gradually reduce nicotine content of all cigarettes sold in the U.S.

Scientists have conducted studies to test nicotine-reduction strategies, using commercial low-yield cigarettes. Such cigarettes do reduce nicotine yield when tested by smoking machines because manufacturers have engineered the cigarettes to

burn faster, and they have used highly porous paper and ventilation holes above the filter. These cigarettes contain significant levels of nicotine and such “cigarette engineering” does not lead to decreased nicotine intake, because smokers are easily able to obtain the nicotine by taking more frequent and bigger puffs, Benowitz and his co-authors noted.

In contrast, in the new study, the absolute content of nicotine in the tobacco was reduced so that it was very difficult or impossible to compensate by smoking more intensely.

In addition to the reduced smoking and nicotine levels, the UCSF scientists looked for changes in exposure to carbon monoxide, tobacco smoke carcinogens and cardiovascular disease risk factors. All these remained stable or decreased, indicating that smokers were not exposed to higher levels of tobacco smoke toxins when they switched, and therefore would not be put at risk by a nicotine reduction intervention.

Benowitz and his colleagues are now conducting a much larger and longer clinical study on the effectiveness and safety of reducing nicotine levels in cigarettes. They plan also to examine whether reduced-nicotine cigarettes result in reduced addiction potential among adolescent experimental smokers.

Source: University of California - San Francisco

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