

Researchers demonstrate that 'safe' cigarettes are as hazardous as tobacco

May 12 2010

Using the same technique they developed to document the harmful effects of tobacco products, a team of researchers found that cigarettes made without tobacco or nicotine may be more carcinogenic because they actually induce more extensive DNA damage than tobacco products. The technique has been awarded U.S. patent No. 7,662,565.

The research team was led by Zbigniew Darzynkiewicz, M.D., Ph.D., professor of pathology. Their study, "DNA damage response induced by exposure of human lung adenocarcinoma cells to smoke from tobacco- and nicotine-free cigarettes," will appear in the June 1 issue of *Cell Cycle* (Volume 9, Issue 11).

Using laser scanning cytometry (LSC) technology to measure DNA damage response to the smoke from commercially available tobacco- and nicotine-free cigarettes, the research team expected to find the alternative products were less hazardous than regular tobacco cigarettes. However, their data suggest that exposure of cells to smoke from tobacco- and nicotine-free cigarettes leads to formation of double-strand DNA breaks (DSBs). Since DSBs are potentially carcinogenic, the data indicate that smoking tobacco- and nicotine-free cigarettes is at least as hazardous as those containing tobacco and [nicotine](#).

The authors conclude that their methodology to assess the potential carcinogenic properties of [tobacco smoke](#), based on measurement of DNA damage response as assessed by LSC, provides a useful addition to the battery of genotoxic tests for probing [cigarette smoke](#) hazards. Such

tests, which can be applied to evaluate the effects of cigarettes and cigarette surrogate products on human health, can be important tools for regulatory agencies such as the [Food and Drug Administration](#) or, in the case of environmental smoke, by the [Environmental Protection Agency](#).

Provided by New York Medical College

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