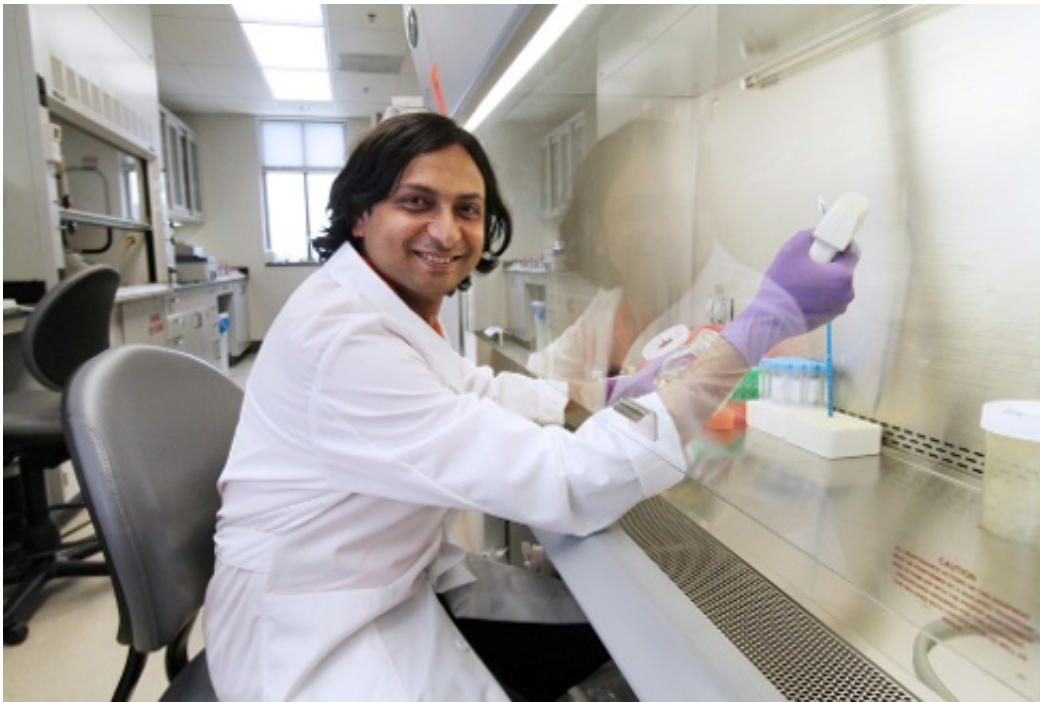


# Smoking-cessation products that contain nicotine may not be safest way to quit

June 12 2014, by Tiffany L Trent

---



Jasmin Bavarva, a geneticist at the Virginia Bioinformatics Institute, uses a process called "next generation sequencing" to explore gene activity.

(Medical Xpress)—The nicotine patch may do more harm than good, researchers at the Virginia Bioinformatics Institute are discovering.

A recent paper in the journal *Oncotarget* details how [nicotine](#) is proving to be a formidable carcinogen, so much so that researchers caution that nicotine-infused smoking cessation products may not be the safest way

to help smokers quit.

Nicotine is one of 4,000 chemicals found in cigarette smoke. While many of these chemicals are recognized as carcinogens, nicotine has up until now only been considered addictive rather than carcinogenic. It is heavily used in smoking cessation products in patches, gum, and now in the increasingly popular electronic cigarette, or e-cigarette.

The latest in a series of studies about the carcinogenic qualities of nicotine revealed that nicotine excessively mutates a cell's DNA.

Geneticist Jasmin Bavarva and Harold "Skip" Garner, a professor of biological science, computer science, and basic science affiliated with the College of Science, the College of Engineering, and the Virginia Tech Carilion School of Medicine, found that nicotine causes thousands of mutations called [single nucleotide polymorphisms](#) (SNPs) in exposed cells, compared with control cells that were not exposed.

These patterns are similar to those identified in [cells](#) experiencing oxidative stress, which is a known precursor to cancer.

A [previous study](#) in *PLOS One* by the researchers looked at [gene expression patterns](#) caused by nicotine.

"We now have a broad picture of genomic effects in nicotine," said Bavarva, lead author of both studies.

"These results are important," said Garner, director of the institute's Medical Informatics and Systems Division, "because for the first time they directly measure large numbers of genetic variations caused only by nicotine, showing that nicotine alone can mutate the genome and initiate a cancer state. This is particularly timely since nicotine is used as a [smoking cessation](#) therapeutic."

Future studies will focus on understanding the effects of long-term exposure of nicotine.

**More information:** Jasmin H. Bavarva, et al. "Nicotine and oxidative stress induced exomic variations are concordant and overrepresented in cancer-associated genes." *Oncotarget*, April 14, 2014.

[www.impactjournals.com/oncotarget... article&op=view&path%5B%5D=2033&path%5B%5D=3019](http://www.impactjournals.com/oncotarget/article/view/path%5B%5D=2033&path%5B%5D=3019)

Provided by Virginia Tech

Citation: Smoking-cessation products that contain nicotine may not be safest way to quit (2014, June 12) retrieved 10 April 2024 from <https://medicalxpress.com/news/2014-06-smoking-cessation-products-nicotine-safest.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--