Acrolein levels in e-cigarettes - Letter

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Dear Editor,

The recent paper by McRobbie et al. (1) is the first prospective study addressing toxicological exposure directly in e-cigarettes (ECs) users. This study adds key information about harm potential of e-vapour products and gets away from the controversial toxicological findings that have been generated in recent laboratories studies because of experimental protocols that do not mimic realistic condition of use (2). Given that the debate over the potential benefits and harms of ECs remains unproductive (3), it is imperative to shift toxicological evaluation directly into the human body.

The study not only shows that urinary and exhaled breath toxicants generated by combustion (i.e. acrolein and carbon monoxide) are of several order of magnitude lower after switching to regular EC use, but that an important decrease is also observed in dual users (i.e. consumers who combine ECs and conventional cigarettes use) that have substantially reduced their daily cigarette smoking. Smokers should be informed that substitution of cigarettes with ECs exposes them to only a fraction of toxicants compared to tobacco cigarettes and that switching to less harmful form of nicotine delivery may have long term beneficial health effects (4).

Nonetheless, the data presented by McRobbie et al. are not conclusive due to the small sample size and the restricted toxicological evaluation (limited to only two toxicants). Moreover, changes in biomarkers of exposure (BoE) may not be uniform. For example, although a significant decrease in acrolein has been reported after use of reduced risk tobacco products, substantial increases were seen in BoE levels for fluorene and naphthalene in the same study population (5).

Most importantly, it must be emphasised that significant reductions in BoEs do not automatically imply risk reduction or harm reversal. Despite decreased overall BoE, switching to the reduced risk tobacco products failed to demonstrate consistent reductions in biomarkers of biological exposure (BoBE). This general lack of...
response in BoBE levels to a reduction in toxicant exposure has been highlighted in a similar study by Sarkar et al. (6) who reported no significant changes in selected cardiovascular disease-related BoBE following a forced switch from a conventional cigarette to a cigarette containing activated carbon in the filter.

Future studies on ECs will have to expand the panel of BoE and to integrate data from biomarkers of biological/physiologic effects.

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REFERENCES


# Cancer Prevention Research

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