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Smoking history can influence the epigenetic and gene expression profile

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TO THE EDITOR: We read with great interest the article by Martin et al. (3) about potential effects of e-vapor exposure on gene expression and we have some observations.

It is important to draw attention to the definitions and selection criteria of participants in the three study groups, because this is likely to introduce bias and erroneous interpretation of the study findings. Previous exposure to tobacco smoking in the vapers group (vapers are ex-smokers) will induce irreversible epigenetic/gene expression changes (1, 4). For example, it is well known that exposure to cigarette smoke leads to alteration of noncoding RNA expression and function (2). Therefore, the observed suppression of a large number of genes in the vapers group is obviously related to their previous smoking history. Because the previous history of tobacco smoking exposure is so important in dictating epigenetic changes, some stratification for the pack-years (this parameter gives an estimate of the total amount a person has been exposed to cigarette smoke over the years and provides an idea of the overall risk related to tobacco use) between active smokers and vapers (i.e., ex-smokers) is mandatory to appropriately compare gene expression between vapers and smokers. The inclusion of a control group made of regular vapers who have never smoked in their life would have been ideal.

Last but not least, the observed association between e-cigarette use and changes in gene expression does not imply causation given the limitation of a cross-sectional design (4). Obviously, a longitudinal study would have been more appropriate to establish potential causation of the e-cigarette exposure effect on gene expression and related clinical implications (e.g., number of influenza infections).

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DISCLOSURES

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R. Emma and M. Caruso have no conflict of interest to disclose.

AUTHOR CONTRIBUTIONS

R.E. drafted manuscript; R.E., M.C., and R.P. edited and revised manuscript; R.P. approved final version of manuscript.

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