AUBMC's Latest Research on Nicotine and Tobacco Reveals: Partially Quitting Smoking by Replacing Some Combustible Cigarettes with Electronic or Heated Tobacco Cigarettes Will Not Reduce Lung Damage

Subsitituting 50% of combustable tobacco nicotine exposure with electronic or heated tobacco products did not attenuate acute lung injury compared to 100% combustible cigarette smoke in an animal model.

Beirut, 12 April 2023: First co-authors, Ahmad Husari MD and Mohammad El-Harakeh Ph.D. showed that substituting fifty percent of combustible tobacco smoke (CS) exposure with either electronic cigarettes (ECIG) or heated tobacco products (HTP) did not reduce lung injury in an animal model. This research was published on March 21, 2023, in Nicotine and Tobacco Research journal by Oxford University Press as part of the American University of Beirut Medical Center's (AUBMC) commitment to promoting relevant research in medical care both locally and internationally.

"CS users who attempt to substitute CS with ECIG and/or HTP are described as dual users and are likely to carry on smoking or continue dual use smoking over the long term," says Dr. Husari, a full-time professor in the practice of pulmonary medicine and critical care at AUBMC. "This animal study involved the evaluation of the acute effects of substituting CS consumption with ECIG or HTP thus mimicking the dual users' approach on the lungs of a mouse model. The study found no evidence that dual smoking is less harmful when compared to regular CS.

The researchers placed mice in different groups that included animals exposed to CS only and animals exposed to a combination of CS and HTP or ECIG. Depending on the assigned group, animals were exposed for three hours in the morning and three hours in the afternoon to either air, CS, ECIG, or HTP for seven days. Lung injury was evaluated by examining the quantity of fluid and, albumin leaking into the lungs, the expression of markers of inflammation, the examination of lung tissues under the microscope, and the presence of cellular death.

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The results of the study demonstrated a significant albumin leak into the lungs in the groups that were exposed to CS or the groups that were exposed to a combination of CS and /or ECIG or HTP. Similar findings where noted for the expression of inflammatory markers and cellular death. Tissue examination revealed significant inflammatory cells infiltration, as well as collagen deposit in the group of animals exposed to CS and in the combination groups (ECIG + CS, HTP + CS).

"Our research provides an opportunity to place special emphasis on the need to help dual users ditch both products and to correct a potentially grave misunderstanding that partially substituting cigarette use with HTP or ECIG will reduce health risks," says Dr. Husari. "Additionally, the study has shown that completely switching to heated tobacco products represented by IQOS or ECIG will result in a significant reduction in lung injury when paralleled to equivalent amounts of combustible Cigarette smoking. However, it should be stressed that according to studies undertaken by the U.S. Food & Drug Administration (FDA), no electronic cigarette has been approved as a smoking cessation tool."

The authors stress that it is still not clear, as to what are the long term consequences of combining different products usage and how these patterns of use might interact. As such, additional animal and human studies are needed to confirm and understand the impact of different combinations and different percentages of exposure to ECIG, HTP, and CS.

Dr. Husari also notes that dual users, who are described by the medical literature, to be significantly younger and with higher education are at risk. Initially, dual users will smoke fewer cigarettes compared to regular smokers. This group will then transition to dual use of regular cigarettes and ECIG or HTP. Finally, a significant percentage of this group will, unfortunately, switch to exclusive combustible cigarette smoking.

"Dual smoking is not providing protection and can be the gateway to exclusive regular cigarette smoking," says Husari. "The only healthy option for lowering the risk of lung disorders is to entirely stop smoking and educating the public again about quitting smoking remains the best course of action."

This co-authorship study falls in line with AUB and AUBMC's scientists' and researchers' pursuit of a more thorough investigation through which they can deepen their research, the results of which will benefit the entire population across the region and globally. Hence, this paper is yet another example of the multidisciplinary approach to complex issues of the tobacco epidemic the world continues to suffer from.

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About AUBMC

Since 1902, AUBMC has been providing the highest standards of care to patients across Lebanon and the region. It is also the teaching hospital for the Faculty of Medicine at AUB (established in 1867), which has trained generations of medical students and physicians, and whose graduates can be found at leading institutions around the world. AUBMC is the only medical institution in the Middle East to have earned the five international accreditations of JCI, Magnet, CAP, ACGME-I and JACIE attesting to its superior standards in patient-centered care, nursing, pathology/laboratory services and graduate medical education.

The Faculty of Medicine has graduated over 4,000 medical students and physicians; the Rafic Hariri School of Nursing provides excellent education for the nursing staff, and the Medical Center meets the healthcare needs of over 360,000 patient visits annually.

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