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Say no to vaping: Blood pressure, heart rate rises in healthy, young nonsmokers

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New research finds that nicotine-filled e-cigarettes cause increases in heart rate and blood pressure in young people, health issues that remain even after a vaping session. The research, originally slated for

presentation at the APS annual meeting at Experimental Biology (canceled due to the coronavirus), is published in the April issue of *The FASEB Journal*.

E-cigarettes are often marketed to teens and young adults as a healthier alternative to traditional tobacco products. Previous studies have shown that active smoking of tobacco cigarettes leads to higher blood pressure and heart rate and lower muscle sympathetic nerve activity (MSNA). MSNA is a direct measurement of nerve traffic to blood vessels that quickly responds to changes in blood pressure. However, changes in cardiovascular and neural responses during e-cigarette vaping have not been as widely studied as responses to tobacco cigarettes.

Researchers from Michigan Technological University studied a group of healthy, 20-year-old nonsmokers. Each volunteer participated in two separate vaping sessions, separated by a month, in which they used a JUUL e-cigarette containing nicotine or a similar nicotine-free placebo for 10 minutes. The research team took the volunteers' blood pressure readings before each vaping session and after a 10-minute recovery period post-vaping. Heart rate, blood pressure and MSNA were measured throughout the vaping sessions.

When the volunteers used the nicotine product, both blood pressure and heart rate increased. Heart rate dropped back to normal ranges, but blood pressure remained high during the recovery period. MSNA activity dropped during vaping and stayed lower than normal during recovery. The volunteers did not experience the same cardiovascular changes when vaping the placebo. These results suggest that nicotine-fueled e-cigarettes repress the transmission of nerve impulses that regulate blood pressure and heart rate (baroreflex function).

"We conclude that nonsmokers who use the JUUL e-cigarette may put themselves at greater risk for acute and/or chronic hypertension," the

researchers wrote.

Joshua Gonzalez, MS, from Michigan Technological University was slated to present "Acute effects of the JUUL e-cigarette on blood pressure and peripheral sympathetic activity in young nonsmokers" at the APS annual meeting at Experimental Biology. Although the meeting was canceled in response to the COVID-19 outbreak, the research team's abstract is published in this month's issue of *The FASEB Journal*.

Provided by Experimental Biology

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