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Cigarette smoke can affect the hearts of both active and passive smokers  
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## [Heart Chamber Affected by Cigarette Smoke](#)

*The left ventricle can be affected by nicotine-activated enzymes*

A new scientific study, published in the European Journal of Heart Failure by University of Illinois at Chicago (UIC) College of Nursing scientists, reveals that prolonged exposure to cigarette smoke may cause significant increases in both norepinephrine - a stress hormone - and other enzymes in the heart, which have the capability to virtually re-shape the form of the left ventricle. This is very bad, as this is the main pumping chamber of the heart, and it plays a crucial role in our cardiovascular systems.

“Cigarette smoke contains more than 4,000 different chemicals, one of which is nicotine. However, the effect of nicotine on the initiation and progression of cigarette smoke-mediated cardiovascular events remains controversial,” argued UIC professor of behavioral health science, Mariann Piano, the main investigator of the current study.

The science team conducted several series of tests on rat models, subjecting one group to air filled with cigarette smoke and the other to regular room air. After 5 weeks of study, the hearts of the rats were removed, and their heart tissues analyzed under the microscope. Piano noticed that this kind of exposure to smoke caused the activation of mitogen-activated protein kinases, enzymes that regulate cell growth and heart muscle survival.

The scientists said that increased enzyme levels could be associated with a higher risk of cigarette smoke-related heart injuries. Also, they concluded that smoke had to be studied as a whole during future surveys, and not be broken in its components, as previous investigations showed that increased quantities of nicotine alone did not have any effect on enzyme levels.

If these results can also be translated to humans, it would mean that prolonged exposure to cigarette smoke, either through active or passive smoking, could significantly alter the shape of people's left ventricle, which could cause conditions as serious as heart failure. In time, the heart loses its efficiency, and blood flow is slowed down. This prevents all cells from being properly irrigated and can cause other medical conditions as well.