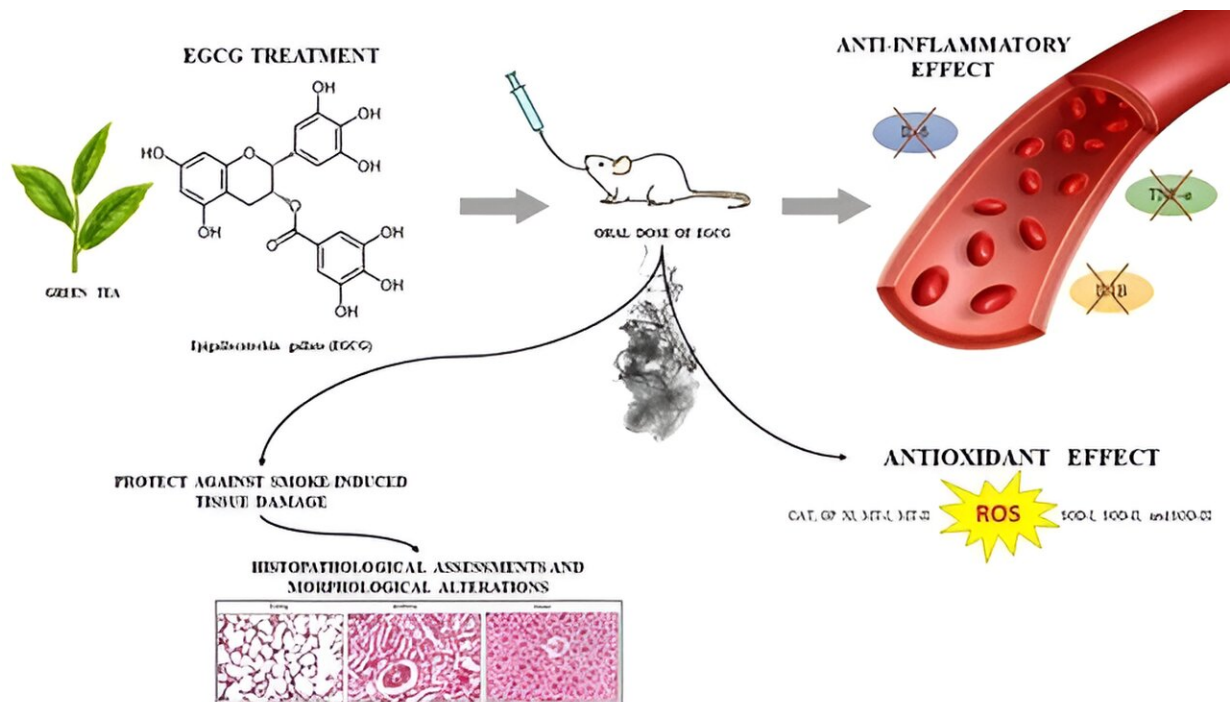


Green tea may help mitigate harm from hookah smoking, mouse study suggests

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Credit: *Molecules* (2023). DOI: 10.3390/molecules28227502

Many people consider hookah smoking to be less dangerous than smoking regular cigarettes. Yet hookah smoke is known to contain carcinogens, heavy metals, and other compounds that cause inflammation and oxidative stress that damage cells.

RUDN University biologists with colleagues from Jordan and Malaysia have found that epigallocatechin gallate (EGCG) can mitigate the toxic effects of hookah. It is a [natural antioxidant](#) called catechin, which is found in large quantities in green tea. Their study is [published](#) in *Molecules*.

"Natural compounds, especially flavonoids, are known for their protective properties. For example, catechins are powerful antioxidant compounds found in green tea. The main one is epigallocatechin gallate (EGCG), which makes up more than 80% of all catechins in green tea.

"EGCG has a powerful antioxidant effect: it easily suppresses [free radicals](#) and mitigates oxidative stress, which prevents [tissue damage](#)," said Vladimir Torshin, Ph.D., Head of the Department of Normal Physiology of RUDN University.

Biologists tested the effect of EGCG on 48 [adult mice](#) divided into several groups. One group inhaled hookah smoke with a flavoring additive, the other without it. Some mice then received a dose of EGCG, while others did not. The level of inflammation in the lungs of mice was assessed by the activity of compounds involved in [inflammatory processes](#) and the antioxidant response. In addition, they carried out a histological analysis of tissues of the lungs, liver, and kidneys.

Experiments showed that in those mice that received EGCG after "smoking" a hookah, markers of inflammation and oxidative stress were significantly less pronounced. For example, the level of interleukin 6, a compound that activates inflammation, increased by 3 to 3.5 times after inhaling hookah smoke.

In those mice that took EGCG, this indicator increased only 2 times when inhaling flavored smoke. In the case of inhaling smoke without additives, it only slightly exceeded normal values. A similar pattern was

observed for other inflammatory markers, in addition, the lung tissue of mice taking EGCG was in better condition. This led to the conclusion that EGCG mitigates the harmful effects of hookah.

"Convincing evidence was found for the protective effect of EGCG on [oxidative stress](#) and inflammatory responses induced in mice by inhalation of hookah smoke. Histological studies also confirmed the positive effect of EGCG on lung tissue, the liver, and the kidneys. However, the molecular mechanisms of this action of EGCG have not yet been studied," Vladimir Torshin, Ph.D., Head of the Department of Normal Physiology of RUDN University said.

More information: Wajdy Al-Awaida et al, Assessing the Protective Role of Epigallocatechin Gallate (EGCG) against Water-Pipe Smoke-Induced Toxicity: A Comparative Study on Gene Expression and Histopathology, *Molecules* (2023). [DOI: 10.3390/molecules28227502](https://doi.org/10.3390/molecules28227502)

Provided by RUDN University

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