

ABSTRACT

Background: Particulate emissions produced from the combustion of diesel, tyre burning and forest fire is known to contain organic toxicants and a variety of reactive radical species which may cause serious respiratory health problems such as asthma.

Materials and methods: The particulate emissions from tyre burning, vehicular exhaust, and simulated forest fire were exposed to an inhalation cage. To simulate environmental exposure conditions, 12-week old albino mice were exposed to particulate emissions at a rate of $\sim 250 \mu\text{gm}^{-3}\text{day}^{-1}$ and their lung tissues were extracted for bioassay analyses. Comparisons were made between the lung tissues of mice exposed to the three types of particulate emissions, and the control mouse in order to determine the biological impact of particulates on the functioning of the lung tissues.

Results: Accordingly, there was swelling and shrinking of lung tissue cells as a result of exposure to tyre and diesel exhaust particulate emissions which caused disconnection of tissues and damage to the blood capillaries within the lung alveoli.

Conclusion: Simulated forest fire particulates caused minimum damage to the lung tissues whereas particulate emissions from diesel and tyre caused grave damage to the lung system of the mice.

Keywords

lungs

histochemistry

particulate emissions

toxicity