

IMMUNE RESPONSE TO EXHAUST GASES DERIVED FROM TWO-CYCLE COMBUSTION ENGINE FOLLOWING EXPERIMENTAL EXPOSURE

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SUMMARY

Experimental exposures using laboratory Wistar rats inhaling the exhaust gases derived from a two-cycle combustion engine under the chamber conditions have been carried out. Immune response reflecting a burden of the respiratory system in the exposed animals following the respiratory exposure has been investigated. In variously designed exposure experiments, the dynamics of pulmonary alveolar macrophages (PAM) activity to phagocyte particular antigen (sheep red blood cells), the hemolysis production, the total serum complement level and the capacity of the pulmonary clearance from the inhaled silica dust have been examined. The findings revealed the depressed ability to produce antibodies against sheep red blood cells (SRBC) in case of prolonged animals exposure during the time-interval of antibodies production. PAM phagocytic activity decreased considerably as well, in the first phases of the SRBC phagocytosis. The total serum complement level was found to be decreased in consonance with the decreased hemolysins production. The pulmonary clearance from the inhaled silica particles was statistically significantly elevated in the animals exposed long-term before the dusting only. In case of the prolonged exposure during the lung clearance period of 25 days, the exposed animals did not show the difference anymore, if compared to the non-exposed group.

Key words: exhaust gases, two-cycle combustion engine, pulmonary alveolar macrophages, serum complement, hemolysins, phagocytosis

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