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Observations of the Changes Occurring in the Rat Trachea Due to Inhalation of Cigarette
Smoke

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Abstract: In this study, the tracheal tissues of rats inhaling cigarette smoke passively during different periods were examined by light and electron microscopy. Malonaldehyde, erythrocyte catalase and arginase levels were also measured. Three groups were formed and a total of 15 Wistar male rats weighing 200-250 g were used. Rats assigned to the first and second groups were made to inhale cigarette smoke for 30 and 60 minutes respectively for a total of 3 months. The subjects in the third group were made to inhale clean air as a control. Cigarettes without filter tips were used throughout the study. Lit cigarettes were inserted into the chamber. At the end of the study period, blood and tissue samples were taken. The results revealed that the subjects which inhaled cigarette smoke for a longer period were affected more. Irregularities in epithelial cells, increase in secretion, and increases in mast cells in connective tissues, especially those which had migrated through the epithelial cells, were observed. The considerable increase in the separations between epithelial cells is of particular note. Malonaldehyde levels in tissues were lower than in the control group, but higher in plasma. The difference in plasma levels was found to be statistically significant. A significant increase was also observed in activity levels of erythrocyte catalase.

Key Words: cigarette, trachea, microscopy, malonaldehyde, catalase.

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