

EFFECTS OF CIGARETTE SMOKE EXTRACT IN THP-1 CELLS

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Cigarette smoke (CS) is a critical factor in the progression and pathogenesis of chronic obstructive pulmonary disease, susceptibility to pulmonary infections and acute lung injury. CS contains over 4500 substances with different toxic, mutagenic, and carcinogenic properties. The objective of current study was to evaluate the effect of cigarette smoke on monocyte cell line -THP-1 cells, particularly on the expression of cell surface adhesion receptors. Cigarette smoke-conditioned medium was prepared using full-strength Red Marlboro cigarettes. Smoke was passed through the culture media (two cigarettes per 25 ml of medium) using a low-pressure vacuum pump. Medium was then filtered, using 0.22 µm filters, and was applied immediately to cell culture for 24 hours. The expression of TNF-alpha, surface markers of THP-1 cells, and oxidative stress were assessed by flow cytometry. We have observed considerable toxicity of CS extract, expressed as an increased percentage of apoptotic and necrotic cells. We have also noticed a significant increase in integrins CD11b/ CD18 expression. CS also induced significant elevation in TNF alpha and mannose receptor expression. Our results demonstrated that 24-hour exposure to CS provoked stress-response and activation of adhesion in THP-1 cells.