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TITLE

Protein Management Cell Proliferation and Apoptosis of Nicotine Induced Hepatic Cells under Curcumin Treated Condition

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Nicotine, the active culprit of tobacco is mainly metabolized in liver. Its abuse elicits acute phase response by activating macrophages to produce pro-inflammatory cytokines which play critical role in apoptosis or cell proliferation. The pharmacologically protective mechanism of curcumin on liver against nicotine-induced stress is still remaining unclear. We investigated the ameliorative mechanism of curcumin against nicotine induced toxicity and also fate of liver under protein malnourished condition. Female Albino-rats of Wister Strain maintained under normal/protein-restricted diets, were subcutaneously injected with nicotine tartrate (2.5mg/kg body weight/day) and orally supplemented with curcumin (80mg/kg body weight/day) for 21 days. The animals were then sacrificed to dissect out liver and proceed with further experiments. The effects of nicotine and curcumin on liver DNA both in vivo and in vitro were observed by thermal denaturation and DNA laddering assays, comet assay, cytokine profiling and mRNA expression.

Nicotine caused more intense DNA damage, promoted hepatic cell death through up-regulating proapoptotic proteins and signaling molecules in protein malnourished individuals compared to normal diet fed rats. It dysregulated homeostasis by up-regulating anti-apoptotic proteins and proliferation promoting molecules resulting increased malignancy of hepatic cells under normal protein condition. Curcumin significantly ameliorated the nicotine induced toxicity in both conditions and regulates the imbalance between cell survival and death induced by nicotine. The protein concentration in the nicotine induced hepatic cell plays the key role in regulating the cellular fate either through proliferative pathway or cytotoxic pathway

Biography

Dr. Brajadulal Chattopadhyay has completed his Ph.D from University of Calcutta, India and postdoctoral studies from Bose Institute, Kolkata, India. He is currently an Associate Professor and engaged in teaching activities in Physics Department of Jadavpur University, India. His major fields of research activities are Microbiology, Immunology and Bio-concrete Technology. Dr. Chattopadhyay is one of the founder members who have developed quality Bio-concrete material by using a novel anaerobic bacterium in India. He has published more than 25 papers in reputed National and International Journals and 5 patents in his career. He has already guided 5 Ph.D. students and more than 10 Ph.D. students are working under his supervision.