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Induction of Apoptosis by *N*-methyl-*N'*-nitro-*N*-nitrosoguanidine, an Alkylating Agent, in Human Prostate Carcinoma CellsCheol Park^{1,2}, Byung Tae Choi³, Won Ho Lee² and Yung Hyun Choi¹¹Department of Biochemistry²Department of Biology, Busan National University, Busan 609-735 Korea³Department of Anatomy, Dong-Eui University College of Oriental Medicine, Busan 614-052;

The alkylating agent *N*-methyl-*N'*-nitro-*N*-nitrosoguanidine (MNNG) is a widely spread environmental carcinogen that causes DNA lesions leading to cell killing. MNNG is a potent direct-acting carcinogen that induces tumors at the site of administration. However, under aqueous conditions, it undergoes hydrolytic decomposition and releases alkylating moieties that can bind DNA. In this study, we investigated the mechanism of apoptosis induced by MNNG in DU145 human prostate carcinoma cells. The growth inhibitory effect of MNNG on DU145 cells were assessed by MTT assay and hemocytometer count. Anti-proliferative effect of MNNG was associated with the induction of apoptotic cell death which was confirmed by nuclear morphological change and flow cytometric analysis. Furthermore, we observed an increase of pro-apoptotic protein Bax expression and a decrease of anti-apoptotic protein Bcl-2 by MNNG treatment in a concentration-dependent manner. MNNG also induced a proteolytic cleavage of specific target proteins such as poly(ADP-ribose) polymerase and β -catenin proteins suggesting the possible involvement of caspases. Thus, our findings suggest that MNNG may be a potential chemotherapeutic agent for the control of human prostate cancer cell model.