

신경아교종세포에서의 산소자유기의 생성에 있어 시아나산의 보호효과

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Protective Effect of Cyanate on Oxygen Free Radical Production in Glioma Cells

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Objective : Cyanate, known as one of the uremic toxins, is derived spontaneously from urea. The aim of this study was to investigate the effect of cyanate on oxygen free radicals (OFRs) induced neurotoxicity in glioma cells.

Methods : Regulatory effects of cyanate were assessed by cDNA microarray analysis on apoptotic factor in glioma cells. Hydrogen peroxide production was measured by xylenol orange method. OFRs were determined by using 2',7'-dichlorofluorescein diacetate. Changes of intracellular Ca^{2+} were measured by using fluorescent probe (fura-2). Expression levels of Bax, Bcl-2 were determined by western blot analysis.

Results : Five genes were upregulated and 16 genes were downregulated in cyanate-treated glioma cells on apoptotic genes. Specially, heat shock 70 kD protein 1A upregulated more than ninefold, while caspase-6, interleukin-6, caspase-1 and caspase-3 were more than twofold downregulated. Treatment with cyanate induced the decrease of hydrogen peroxide and OFRs in a dose-dependent manner. Also, intracellular Ca^{2+} decreased by treatment with cyanate. Western blot analysis showed the down-regulation of Bax, while don't showed significant change of Bcl-2.

Conclusion : These results suggest that cyanate have protective effect through heat shock 70kD protein 1A, caspase-1, caspase-3 and caspase-6 in glioma cells.

Key Words : 신경교종세포, 시아나산, 산소자유기
Glioma cell, Cyanate, Free radical