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Cisplatin 신독성에 대한 C-phycocyanin 신보호 효과

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Renoprotective Effects of C-phycocyanin in Cisplatin-induced Nephrotoxicity

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Introduction : Although cisplatin is a highly effective antineoplastic agent, its nephrotoxicity is a major clinical problem. Recently, it was reported that Spirulina, a blue-green alga with potent antioxidant properties, has significant protection against cisplatin induced nephrotoxicity in rat. The aim of the present study was to establish the possible protective role of C-phycocyanin, one of the active ingredients of Spirulina, against cisplatin-induced apoptosis.

Methods : The study was carried out using human kidney-2 (HK-2) cell and male C57BL6 mice. Cells and mice were divided into 4 groups; untreated control group, C-phycocyanin treated control group, vehicle with cisplatin treated group, C-phycocyanin with cisplatin treated group. In HK-2 cells, we evaluated cell viability. And the protein levels of p-38, JNK, Bax, Caspase-2 were evaluated by western blot. In mice, we evaluated blood chemistry. And renal Bcl-2, Bax were evaluated by western blot, We exam caspase activity. We examined TUNEL, and light microscopic findings in mice.

Results : The cisplatin-induced cell death was significantly attenuated in cells pretreated with C-phycocyanin. C-phycocyanin also significantly attenuated the cisplatin-induced increase in the expression of p-38, JNK, Bax protein, and increase in the activity of caspase-3 in cells. Serum level of creatinine in C-phycocyanin with cisplatin treated mice was significantly lower than that of vehicle with cisplatin treated mice. C-phycocyanin significantly reduced renal Bax protein, caspase-3 activation, and TUNEL positive apoptotic cells in cisplatin treated mice.

Conclusion : In conclusion, the results of the present study suggest that C-phycocyanin attenuates cisplatin induced nephrotoxicity. It associated with anti-apoptotic effect via suppression of p-38 and JNK.

Key Words : 시스플라틴, C-phycocyanin
Cisplatin, C-phycocyanin