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**PROTECTION EFFECT OF GINSENG EXTRACT AGAINST
APOPTOTIC CELL DEATH INDUCED BY
2,2,5,5-TETRACHLOROBIPHENYL IN NEURONAL SK-N-MC
CELLS**

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Oxidative stress plays an important role in the pathological process of neurodegenerative diseases. Polychlorinated biphenyls (PCBs) are ubiquitous environmental contaminants, some of which may be neurotoxic. Our previous studies showed that 2,2',5,5'-Tetrachlorobiphenyl (PCB 52) induced apoptotic death in human neuronal SK-N-MC cells, which was demonstrated on gel electrophoresis by visualization of the proteolytic cleavages of β -catenin and poly(ADP-ribose) polymerase (PARP) and of the production of characteristic ladder patterns of DNA fragmentation. In the present study, we investigated whether Panax ginseng extract protects the PCB 52-induced apoptotic death in human neuronal SK-N-MC cells. Addition of 500 $\mu\text{g/ml}$ of ginseng extract in the growth medium significantly protected the neuronal cell death induced by PCB52 and also remarkably attenuated lipid peroxidation, generation of reactive oxygen species, DNA fragmentation, and proteolytic cleavages of β -catenin and PARP induced by PCB52. These results show that Panax ginseng extract strongly protects the apoptotic death in human neuronal SK-N-MC cells induced by PCB52. From these results, we suggest that Panax ginseng extracts may protect the oxidative injury of neuronal cells.