Effect of Cadmium on cerebrovascular endothelial cells

Eun Kyung Park, Yi-Sook Jung, Soo Hwan Lee, Eun Joo Baik and Chang-Kiu Moon[1] and Chang-Hyun Moon

Dept. of Physiology, School of medicine, Ajou Univ, Suwon #442-749, Korea
[1]College of pharmacology, Seoul Natl Univ, Seoul, #110-799 Korea

Cadmium is heavy metals that cause vascular lesions such as artherocslerosis and hypertension. However, less information is available concerning for toxicity. The results of in vitro and in vivo studies demonstrate that cadmium cation induce an oxidative stress in various tissues. Oxidative stress have been shown to be involved in the mutagenicity and apoptosis of mammalian cells treated with cadmium. In this study, we investigated the effect of cadmium on viability was evaluated by MTT assay whether cadmium induce cell death in cerebrovascular endothelial cells. Cell death was quntitatively determined by measuring lactate dehydrogenase(LDH) activity and morphology in bEnd.3 cell line.

In bEnd.3, cell viability was significantly decreased 12, 24 hours after the treatment with 10-50μM $CdCl_2$.-induced cell death was also observed morphologically by microscope. Cadmium also increased TUNEL-positive cells, and this increase was significantly inhibited by a caspase inhibitor, ZVAD.

In conclusion, our results suggest that cadmium can cause cell death in brain endothelial cells and this cell death is partially related to apoptosis.