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EFFECT OF ANTIOXIDANTS AND NMDA RECEPTOR ANTAGONISTS ON OXIDANT-INDUCED NEUROTOXICITY IN MOUSE SPINAL DRG NEURON CULTURES.

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It is well known that oxygen radicals induce neuronal cell damage by initiation of lipid ·peroxidation chain reaction. Recent work has been also demonstrated that enzymatically generated free radicals cuse the release of glutamate and aspartate from cultured rat hippocampal slices. In order to characterize the mchanisn of oxidant-mediated neurotoxicity in mouse dorsal root ganglion(DRG) neuron cultures, cultured cells were exposed to 20mU/ml xanthine oxidase(XO) after 2 hours of preincubation with oxygen radical scanvengers and NMDA receptor antagonists. Cell viability was determined by MTT assay. Oxidative stress-induced neurotoxicity resulted in significant cell death in a time-dependent manner on DGG neuron cultures. The neurotoxicity induced by oxygen radicals was blocked by superoxide dismutase(SOD), catalase and vitamin E in a dose-dependent manner. MK-801, NMDA receptor antagonist also showed positive effect against oxidant-induced neurotoxicity in mouse DRG neuron cultures. These results indicate that seletive antioxidants and NMDA receptor antagonists are effective in protecting oxidant-induced neurotoxicity in DRG neurons of mouse.

Key words : Oxygen radical, Antioxidant, DRG neuron