Synergistic protective effect of picroside II and NGF on PC12 cells against oxidative stress induced by H\textsubscript{2}O\textsubscript{2}

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Abstract:
Epidemiological studies suggest that nerve growth factor (NGF) is associated with a reduced risk of acute or chronic neuropathies. We studied the synergistic protective effect of picroside II and NGF against the oxidative stress in PC12 cells induced by hydrogen peroxide (H\textsubscript{2}O\textsubscript{2}). The fluorescent probe CDCFH was used to assess the intracellular reactive oxygen species (ROS) level, and MTT assay, morphological observation as well as LDH leakage test were conducted to measure cellular injury. The H\textsubscript{2}O\textsubscript{2}-induced cytotoxicity was significantly attenuated in the presence of picroside II (25 \(\mu\text{g/ml}\)) and NGF (2 ng/ml). Cultures with this combined treatment possessed decreased level of ROS while increased cell survival, as compared to that of picroside II or NGF alone-treated cells. Accordingly, it was concluded that their synergistic protective activities against oxidative stress \textit{in vitro} were demonstrated in various aspects, including reversing morphological changes, enhancing the ability of cell proliferation and ROS scavenging. Such action supports the therapeutic potential of picroside II and NGF in treating nervous disorders based on their synergistic effect.

Key words: hydrogen peroxide, nerve growth factor, PC12 cells, picroside II, reactive oxygen species