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Peroxiredoxin I as a cell-specific marker and indicator for microglia activation in primary neural and BV-2 cells

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Abstract

Peroxiredoxins (Prxs) are a family of antioxidant enzymes recently characterized, but their distributions have not been resolved in the central nervous system (CNS) yet. In this study, we determined the type and status of cells expressing Prx I in mouse brain, primary neural and BV-2 cells. In the brain, the most intense immunoreactivities for Prx I and II were detected in oligodendrocytes and neurons, respectively. However, the high immunoreactivity for Prx I was observed exclusively in microglia present in the mixed neuron-glia culture, and this was verified in the mixed glia and the enriched microglia cultures. Further evidences for the Prx I specificity were obtained by demonstrating its upregulated expression in the primary microglia after lipopolysaccharide (LPS) stimulation, and its relatively high expression in BV-2 cells, respectively. These findings indicate that, although Prx I is expressed in oligodendrocytes in normal brain, it can be used as a cell-specific marker and indicator for spontaneous microglia activation when microglia are cultured in vitro. And it was proposed that the altered Prx I upregulation is due to the oxidative stresses occurred during in vitro cultures of primary microglia or microglia cell line.

Keywords : *peroxiredoxin I, mouse brain, primary microglia, BV-2 cells, activation*