Fruit Juices with high anthocyanins content may prevent oxidative damages of nervous system. The present study is to evaluate the neuroprotective effect of selected high-anthocyanin juices including blackcurrant, blueberry, cranberry, plum, and grapes of concord, cabernet and Kyoho cultivars in hypoxia incubation of C6 rat glial cells with Na_{2}S_{2}O_{4} as the oxidative stressor. The cells were pre-incubated in a medium containing a juice at $\frac{1}{160}$ of the single strength concentration for 24 h, harvested, and then incubated in a medium containing 5 mM Na_{2}S_{2}O_{4} for 30 min. Mulberry juice and Kyoho grape juice were found to exhibit the best neuroprotective effect with an increase in the cell viability from 32-40% in the control to 68% and 82% in the treated groups, respectively. The superoxide dismutase level was significantly increased in the cells by treating with blackcurrant, concord grape, or cranberry juice. The glutathione level was increased by treating with Kyoho grape, blackcurrant, or red plum juice. The catalase level was increased by treating with blackcurrant juice. We conclude that cell viability is not determined by antioxidation enzyme activities in the hypoxia incubation, and that mulberry juice and Kyoho grape juice have better potential to be used in the formulation of health food for the protection of nervous system from hypoxia damage based on the cell viability data.