

*Original Article*

**Oxidative stress and PARP activation mediate NADH treatment-induced decreases in C6 glioma cell survival**

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**Abstract:** NADH plays key roles in energy metabolism and mitochondrial functions. However, it is unknown if NADH treatment may affect cell survival. In this study we investigated the effects of NADH treatment on the survival of glioma cells. We found that treatment of 10 — 1000  $\mu$ M NADH dose-dependently decreased the survival of C6 glioma cells. This effect of NADH on glioma cells appears to be mediated by oxidative stress, because NADH treatment induced an increase in intracellular oxidative stress, and two antioxidants — N-acetyl cysteine and Trolox — profoundly decreased the effect of NADH. NADH-induced oxidative stress appears to reduce the cell survival at least partially by activating poly(ADP-ribose) polymerase (PARP), because two PARP inhibitors partially decreased the effect of NADH. Collectively, our study has indicated a novel biological property of NADH: NADH can significantly decrease glioma cell survival by inducing increases in oxidative stress and activating PARP. These results have further suggested that NADH may become a new drug for treating gliomas. (IJPPP1008001).

**Key words:** NADH, Glioma cells, Cell death, Oxidative stress, Poly(ADP-ribose) polymerase

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