



Aquaporin in the proliferation and apoptosis of diabetic myocardial cells

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ABSTRACT. The aim of this study was to explore the effect of aquaporin on the molecular mechanism of human diabetic myocardial cell apoptosis. The methylthiazolyle tetrazolium assay was used to detect the inhibitory effect of different concentrations of aquaporin on cell growth. The rate of aquaporin-induced myocardial cell apoptosis was detected by flow cytometric analysis of Annexin V-fluorescein isothiocyanate/propidium iodide double-stained cells. We also attempted to quantify the expression of Bcl-2, Bax, caspase-3, and survivin in diabetic myocardial cells by western blot analysis. Aquaporin was found to inhibit the proliferation of diabetic myocardial cells in a concentration-dependent manner; the increase in aquaporin concentration led to an increase in Bax (apoptosis protein) expression, decrease in Bcl-2 expression (anti-apoptosis protein), increase in the Bax/Bcl-2 ratio, and a decrease in caspase-3 and survivin expression ($P < 0.05$). Therefore, aquaporin significantly inhibits the proliferation of diabetic myocardial cells and cell apoptosis in a dose-dependent manner by upregulating the ratio of Bax/Bcl-2 protein expression, activating the caspase-3 protein cascade, and regulating the expression of survivin.

Key words: Aquaporin; Diabetes; Myocardial cell; Cell proliferation; Apoptosis