Effect of Fasudil on Acrylamide-Induced Cytotoxicity in PC12 Cells Through Evaluation of ROS and MTT Test

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Published: 11 April, 2017

Abstract

**Introduction:** Acrylamide (ACR) known as a neurotoxic agent in human and animals. Previous studies have been shown; fasudil improves neurological deficit and neuronal damage. In this study, the effect of fasudil, potent Rho-kinase inhibitor, on ACR-induced cytotoxicity was evaluated using PC12 cells as a suitable in vitro model. **Materials and Methods:** PC12 cells were exposed to different concentrations of fasudil (50, 25, 5, 10) and 100 µM) for 24 h. Then, ACR 6 mM was added. After 24 h exposure with ACR, cell viability was determined using MTT test. For evaluation reactive oxygen species production, 2, 7-dichlorofluorescein diacetate (DCFH-DA) method was used. In addition the levels of Bax and Bcl-2 proteins were evaluated using western blot analysis. **Results:** ACR Exposure increased ROS production and Bax/Bcl-2 ratio while decreased cell viability. Pretreatment with fasudil (50) µM) for 24 h inhibited ROS production (***p< 0.001) and increased viability (***p< 0.001). Also, fasudil could decrease Bax/Bcl-2 ratio but was not significantly. **Conclusion:** The oxidative stress and apoptosis pathway play important roles in ACR toxicity on PC12 cells. Fasudil exhibited protective effects on ACR toxicity through inhibition of oxidative stress and apoptosis pathway.

**Keywords:** Fasudil, Acrylamide, Apoptosis, Oxidative stress

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