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Poster Presentation

Effect of Clavulanic Acid on Trimethyltin-Induced Cytotoxicity in PC12

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Abstract

Introduction: Trimethyltin (TMT) is a short-chain trialkyltin used as a stabilizer of plastics. It is also a known neurotoxic agent in both human and animals. Clavulanic acid is previously known as a non-competitive inhibitor of β -lactamase. Oral bioavailability, low antibiotic activity and good CNS penetration are important properties of CA which nominated this compound for evaluation neuroprotective effects. **Materials and Methods:** PC12 cells were exposed to different concentrations of CA for 24 h. Then, TMT at final concentration 20 μ M was added. After 24 h exposure, cell viability was determined using MTT test. For evaluation reactive oxygen species production, 2, 7-dichlorofluorescein diacetate (DCFH-DA) method was used. Additionally the levels of Bax, Bcl-2 and Caspase 3 proteins were evaluated using western blot analysis. **Results:** Exposure to TMT significantly increased ROS production, Bax/Bcl-2 and Caspase 3 protein levels while decreased cell viability. Pretreatment of cells with CA inhibited ROS production and increased viability. Also, CA could decrease apoptosis through modulation of proteins involved in apoptotic pathway. **Conclusion:** The oxidative stress and apoptosis pathway have important roles in toxicity of TMT in PC12 cells. Clavulanic acid exhibited protective effects through inhibition of oxidative stress and apoptosis pathway.

Keywords: Clavulanic acid, Trimethyltin, Apoptosis, Oxidative stress

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