

PROTECTIVE EFFECT OF L-CYSTEINE ON CATECHOL-INDUCED TOXICITY TO MURINE NEUROBLASTOMA CELLS (N2a)

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Catechol (CAT) is a metabolite of benzene that oxidizes in physiological medium forming reactive oxygen species (ROS) and quinones. L-cysteine is a thiol-containing amino acid that has reduced ROS generation in some experiments. **AIM:** We compared CAT-induced cytotoxicity to N2a and SH-SY5Y cells, and also tested if L-cysteine could protect N2a cells. **METHODS:** Cultures of neuroblastoma cells were maintained in MEM/F12 supplemented with 10% fetal calf serum, 2 mM L-glutamine, penicillin (100 IU/ml), and streptomycin (100 µg/ml). Cells were treated with CAT in concentrations ranging from 1 to 200 µM for 72 hours in order to determine the EC₅₀. Cells were also treated with L-cysteine in the range of 20 µM to 3,000 µM to assess the protection against CAT-induced cytotoxicity. Cell viability was assessed by the 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay. **RESULTS:** CAT was cytotoxic to N2a and also to SH-SY5Y cells after 72 hours. The EC₅₀ to N2a was 38.5 µM, and it was 33.5 µM to SH-SY5Y. However, there was not a correlation between the formation of quinones and loss of cell viability in both cell strains. L-cysteine at concentrations above 200 µM protected N2a cells against the cytotoxicity induced by 60 µM CAT. **CONCLUSIONS:** The results of this study indicate that CAT is toxic to N2a cells and L-cysteine protected them suggesting that cell death could be mediated by ROS.