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PROTECTING EFFECT OF HYPOTAURINE FROM HYDROGEN PEROXIDE INDUCED CYTOTOXICITY IN PLACENTAL TROPHOBLAST CELLS

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ABSTRACT

The excessive production of reactive oxygen species (ROS) in the placenta is implicated in the pathophysiologies of preeclampsia and/or intrauterine growth retardation. Hypotaurine is known to be present in the embryo environment at high levels and exert beneficial effects on embryo development by neutralizing hydroxyl radicals. Since antioxidant defence mechanisms in the placenta are still poorly understood, the role of placental hypotaurine as an antioxidant is need to be elucidated. The purpose of this study is to examine the cytoprotecting effect of hypotaurine against oxidative stress induced by hydrogen peroxide (H_2O_2) in TR-TBT 18d-1 cells used as a model cell line of placental syncytiotrophoblasts. TR-TBT 18d-1 cells were preincubated with antioxidants for 24 hours in DMEM containing 10% dialyzed FBS and were subsequently exposed to H_2O_2 for 15 min. The cell viability was measured by the MTT assay. The viability of TR-TBT 18d-1 cells was significantly reduced by exposure to H_2O_2 for 15 min at concentrations more than 1 mM. The H_2O_2 -induced cytotoxicity in TR-TBT 18d-1 cells was partially attenuated by pretreatment with hypotaurine or ascorbic acid at 1 mM, but was not significantly affected by pretreatments with taurine or D-mannitol used as a negative control. In conclusion, hypotaurine exerts significant cytoprotecting effect from H_2O_2 in TR-TBT 18d-1 cells. Hypotaurine appears to play an important role for neutralizing ROS in the placenta.

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