The Endoplasmic Reticulum Chaperone GRP94 Is Induced in the Thyrocytes by Cadmium

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We established a relationship between the toxic effects of cadmium on the expression of the endoplasmic reticulum (ER) chaperone GRP94 (glucose regulated protein 94) and cell survival in cultured rat-thyrocytes of FRTL5 cells. There are no data reporting that the enhanced expression of GRP94 by Cd stimulation is detectable in thyrocytes. Western blot analysis revealed higher levels of GRP94 expression in those cells post-treated with low concentrations of Cd, following a step-down treatment method, than in Cd pre-treated cells or cells not treated with any Cd, due to changes in cellular sensitivity after pre-treatment with Cd and the possible induction of GRP94 expression after removal of a low concentration of Cd. Elevated GRP94 expression in thyrocytes post-treated with Cd confers a survival advantage by rendering them resistant to cytotoxic stress, and the existence in the thyrocytes of a Cd-specific pathway regulates the expression of stress proteins by Cd.