

## **Abstract**

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PDIA3 is a member of the protein disulfide isomerase family (PDI) and it is a stress-responsive protein. It is also involved in various cellular signalling pathways and has various functions in the cell. The best-known location is in the endoplasmic reticulum where it plays a major role mainly in the proper folding and quality control of glycoproteins, and participation in the assembly of the major histocompatibility complex class I. However, its existence has also been described in many other cell compartments, such as nucleus, mitochondria, cell surface or cytosol, where it interferes in various processes. While in some instances these roles need to be confirmed by further studies, a lot of observations confirmed its involvement in the signal transduction (for example related with STAT protein) from the cell surface and the regulatory processes in the nucleus. Recent studies have also confirmed its increased expression in various pathological states.

The aim of our work was to find out what is its role in the exposure of the MDA-MB 468 and MCF-7 cell lines to stress. After calculating the optimal concentration, these cells were exposed to stress in the form of tert-butyl hydroperoxide and we observed the expression of PDIA3 protein after 3, 6 and 24 hour intervals along with the control sample. In the next experiment cells were pre-treated with  $17\beta$ -estradiol before stress exposure as it is assumed that different levels of protein expression in both cell lines after exposure to stress depend on whether the cells are  $17\beta$ -estradiol receptor positive or negative (MDA-MB 468 are ERec negative and MCF-7 are ERec positive). Our study therefore extends the knowledge of PDIA3, illuminating the stress response processes in the MDA-MB 468 and MCF-7 cell lines. While the expression of the protein in the MCF-7 cell line is almost unchanged after treatment with tBOOH, the MDA-MB 468 changes significantly. The difference can also be observed after the pre-treatment of cells by  $17\beta$ -estradiol.