

Molecular analysis of Bcl- γ and cyclin D δ expression in differentially expressing estrogen receptor breast cancer MCF γ , T δ YD and MDA-MB- δ 6A cell lines treated with adriamycin

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Abstract

Background and purpose of the study: Bcl- γ and Cyclin D δ (CCND δ) are key elements in cancer development and progression. Bcl- γ acts as a cell death suppressor and is involved in apoptosis regulation. Cyclin D δ is an important regulator of G δ /S phase of the cell cycle progression. In addition, estrogen receptor (ER) is an important prognostic factor in breast cancer cells. Therefore it is important to determine the Bcl- γ and CCND δ expression in MCF γ , T δ YD and MDA-MB- δ 6A breast cancer cell lines with different ER status following **Adriamycin** (ADR) treatment. Methods: Cytotoxicity of ADR (200 and 400 nM) after 1-3 days exposure of the cell lines was evaluated by MTT assay. The mRNA and protein levels of Bcl- γ and cyclin D δ in tested cell lines were also analyzed by RT-PCR and immunocytochemistry (ICC) methods. Results: ADR cytotoxicity was highest in MDA-MB- δ 6A and lowest in MCF γ cells in a time-dependent manner. Bcl- γ mRNA increased in MCF γ and decreased in MDA-MB- δ 6A after exposure to ADR but it was less detectable in T δ YD cells. The expression of CCND δ in MCF γ with high level of ER expression was higher than the other two cell lines in untreated conditions. However, CCND δ mRNA did not show significant changes after ADR treatment. Immunocytochemical analysis did not show significant differences between Bcl- γ protein expression in the presence or absence of ADR in MDA-MB- δ 6A cell line while in T δ YD and MCF γ cells its expression decreased after exposure to ADR. In addition to nuclear expression of cyclin D δ in all cell lines, strong cytoplasmic expression of cyclin D δ protein was observed only in MCF γ and T δ YD cells. Conclusion: The tested cell lines with different levels of ER expression showed differential molecular responses to ADR that is important in tumor-targeted cancer therapy.

Reaxys Database Information

Author keywords

Adriamycin; Bcl- γ ; Breast Cancer; CCND δ ; Immunocyto-chemistry; RT-PCR

Indexed Keywords

EMTREE drug terms: cyclin D δ ; doxorubicin; estrogen receptor; messenger RNA; protein; protein bcl γ ; tetra zolium blue

EMTREE medical terms: article; breast cancer; cancer cell culture; cell strain MCF γ ; cell strain MDA MB δ 6A; cell strain t δ Yd; controlled study; cytotoxicity; drug efficacy; female; human; human cell; immunocytochemistry; protein expression; real time polymerase chain reaction; statistical significance

Chemicals and CAS Registry Numbers: doxorubicin, 23214-92-8, 20316-80-9; protein, 77204-70-0; protein bcl γ , 219306-68-0; tetra zolium blue, 1871-22-3

Manufacturers:Drug manufacturer: Ebewe, Austria.