

عنوان مقاله:

New Perspective on the Action Mechanism of Doxorubicin in Breast Cancer- Overexpressions of miR- $\lambda\gamma\phi$ - $\gamma\phi$  and miR- $\gamma\gamma\gamma$ - $\gamma\phi$  and Downregulation of STAT $\gamma$  Gene

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خلاصه مقاله:

Background: Breast cancer is one of the common malignancies in women, for which doxorubicin (DOX) is widely used in its chemotherapy. Recently, it has been found that DOX affects the expression profile of oncogene genes and miRNAs. In this study, the impacts of DOX on the expressions of the STAT $\gamma$  gene, miR- $\lambda\gamma\phi$ - $\gamma\phi$ , and miR- $\gamma\gamma\gamma$ - $\gamma\phi$  were studied in the MCF- $\gamma$  breast cancer cell line. Methods: After exposure of MCF- $\gamma$  cells with DOX, the MTT method was applied for evaluating the cell viability. Apoptosis and necrosis percentages were measured using flow cytometry. Also, the levels of ROS and NF-KB were measured in DOX-treated cells. Then, exosomes secreted from these cells were prepared. The shape of exosomes was studied by SEM. Finally, the expression of bax, bcl- $\gamma$ , p $\delta\gamma$ , casp $\gamma$ , STAT $\gamma$  gene, and miR- $\lambda\gamma\phi$ - $\gamma\phi$  and miR- $\gamma\gamma\gamma$ - $\gamma\phi$  in MCF- $\gamma$  cells as well as exosomes were evaluated using the RT-PCR technique. Data analysis was done by T-test in GraphPad Prism $\lambda$  software. Results: The exposure of MCF- $\gamma$  cells to doxorubicin led to a concentration-dependent decrease in cell viability and increases in apoptosis and necrosis. ROS and NF-KB activity were increased in DOX-treated cells. In DOX-treated cells, decreased expressions of bcl- $\gamma$  and STAT $\gamma$  genes and overexpression of bax, p $\delta\gamma$ , casp $\gamma$ , miR- $\lambda\gamma\phi$ - $\gamma\phi$ , and miR- $\gamma\gamma\gamma$ - $\gamma\phi$  were observed compared to untreated control cells. Conclusion: One of the mechanisms of the anti-breast cancer effects of DOX is the induction of changes in the expression of oncogenic genes, mediating by downregulating of STAT $\gamma$  gene and overexpressing miR- $\lambda\gamma\phi$ - $\gamma\phi$  and miR- $\gamma\gamma\gamma$ - $\gamma\phi$ . More studies are needed in this field.

کلمات کلیدی:

Breast cancer, Gene, miRNA, Doxorubicin

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