**عنوان مقاله:**

Evaluation of Antiproliferative effect of Metformin on breast cancer

**نویسنده:**

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**خلاصه مقاله:**

Background and aim: Metformin, a biguanide frequently used in the treatment of type 2 diabetes, has been demonstrated to exert marked chemopreventative and antiproliferative effects against various types of cancer. In this study, we evaluated the anticancer effects of Metformin on breast cancer cell line MCF7, in cellular and molecular scale. Materials and methods: MTT assay and flowcytometry were carried out to appraise the effect of Metformin on cell viability and apoptosis respectively. Gene expression of AKT, Survivin and mTOR was measured using real-time PCR. Results: Metformin significantly diminished viability of MCF7 cell line. Moreover, analysis of flowcytometry data indicates that Metformin increases G1 arrested cell population thus inducing apoptosis which is in consistence with the data from real-time PCR which demonstrates an decrease in AKT, Survivin and mTOR gene expression. Conclusion: Metformin activate AMPK. AMPK inhibit mTOR expression and therefore inhibit Survivin expression. The antiprolifrative effect of Metformin can be induced by inhibition of Survivin. Metformin is also able to inhibit cell proliferation via activation of the growth inhibitory adenosine monophosphate-activated protein kinase (AMPK). AMPK blocks signaling via the phosphatidylinositol 3-kinase (PI3K)/Akt and mitogen-activated protein kinase (MAPK) pathways, downstream of the insulin and IGF1 receptors. Finally Metformin, alone or in combination with other drugs, could be a potent anticancer agent for targeting breast cancer.

**کلمات کلیدی:**

Metformin. Breast cancer, MCF7,AKT, mTOR, Survivin

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