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THESIS ABSTRACT

Biochemical studies on the relation between tamoxifen, nano-nutrients and some bioactive components and gene expression in experimental breast cancer

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Background: Research encourages the use of nanotechnology to limit the development and spread of breast cancer and the inhibitory effect of them on development of toxic materials. **Aim**: To study converting drug (Tamoxifen), some nutrients (yeast) and bioactive compounds (Silymarin and Isoflavone) to nanoparticles and study their different effects in nano and normal scale on gene expression. **Materials and Methods:** To induce mammary tumor, mice were treated for 180 days with a single oral dose of (25 mg/kg) 7,12-dimethylbenz[a]anthracene (DMBA) in female rats. The body weight and food consumption will be examined. Upon the completion of the study, the histopathological studies on the breast tissues will be performed. The therapeutic and protective effects of these compounds in nano and normal scale were evaluated using the appropriate parameters to determine the level of several chemicals related to oxidative damage (8-OHdG, Lipid Peroxide, TAC), apoptosis, plasma estrogen and ErbB-2 in the blood samples. Also, the gene expression of ErbB-2 was investigated in the blood samples. All the experimental results evaluated, tabulated and statistically analyzed. **Results**: Tamoxifen in the form of nanoparticles increased apoptosis and the levels of lipid peroxidation while reduced the signs of breast cancer ErbB-2 and 8-OHdG and the level of estrogen as compared with the natural form of tamoxifen and. Although the nano silymarin group did not show activation of the apoptosis process, it showed lower levels of 8-OHdG, ErbB-2, and estrogen and also had the ability to inhibit the progression of breast cancer when administered at the late stage. **Conclusion**, Breast cancer is highly curable if diagnosed with nutrients or medications whether in their normal or nano particles form at an early stage.

Keywords: Bioactive Components; Breast Cancer; Experimental Rats; Gene Expression; Nanonutrients

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