

**Tamoxifen Resistance in Breast Cancer  
Tracking the Changes in Lactate Dehydrogenase Gene Expression**

**By**

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**Abstract**

Lactate dehydrogenase enzyme is a key enzyme in the last step of glycolysis, playing a role in the pyruvate-to-lactate reaction. It is associated in the prognosis and metastasis of many cancers including breast cancer. In our study we investigated its role in acquiring tamoxifen resistance in MCF-7 cell line by tracking its genes expression levels during the process of developing tamoxifen resistance and looking closely at its promoter methylation levels. Lactate dehydrogenase is encoded by two genes LDHB and LDHA. An up regulation of 16 times LDHB gene expression was observed around the IC50 concentration of tamoxifen in treated cells, while fluctuation in LDHA gene expression levels was found. Furthermore, morphological changes in the cells shape accompanied the change in gene

expression. Bisulfate treatment followed by sequencing of LDHB promoter was performed to track any change in methylation levels; hypomethylation of certain CpG areas was found suggesting that gene expression up regulation could be due to methylation levels changes.