MICRORNA LET7I ENHANCED THE TAMOXIFEN SENSITIVITY OF BREAST CANCER CELL LINE MCF-7

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The expression of the estrogen receptor (ER) and progesterone receptor (PR) is an important factor in breast cancer. Out of the four subtypes, the ER+/PR+ subtype has the highest occurrence with a percentage of 62.9% of all cases. Most women who are diagnosed with breast cancer are premenopausal, which means they have high levels of circulating estrogen (estradiol), and accordingly, can activate the ER to drive the proliferation and growth of breast cancer cells. Recent data from the laboratory have led to a working model that inhibition of specific members of the let7 family of microRNA (Let7i) can help protect brain cells. By inference, we suggested that the converse, that is, an upregulation of Let7i could favor cell death, and in the context of cancer, this would be a desired effect. To test our hypothesis, we focused on a model of breast cancer, the MCF-7 cells, to determine if an upregulation of Let7i facilitated/enhanced the cytotoxic effects of tamoxifen, an ER antagonist, that is used in the treatment of breast cancer. Identifying an adjunct therapy that enhances the effect of currently used chemotherapeutics could require much lower doses of the drug required to elicit its effect, which in turn, could significantly mitigate side effects and improve not only tolerance to chemotherapy, but also quality of life associated with cancer treatment. The data show that expression of the Let7i mimic greatly enhanced the cytotoxic effects of tamoxifen and suggest this strategy may be worthy of further investigation to treat breast cancer.

Keywords: breast cancer, miRNA Let7i, tamoxifen