

Abstract

The Effects on Proliferation of siRNA-Mediated GLS1 Inhibition in MDA-MB 231 Breast Cancer Cells [†]

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Abstract: The main energy source of cancer cells is known as glucose. However, they use glutamine as a second energy source besides glucose. In this study we investigated effect of siRNA mediated inhibition of glutaminase (GLS1) enzyme in the first step of glutamine metabolism on proliferation and apoptosis which are the main features of cancer. In our study we determined the cell viability by MTS analysis and the apoptosis rate by Annexin V using triple negative MDA-MB 231 cell line belonging to aggressive subtype of breast cancer. Our study demonstrated that siRNA-mediated silencing GLS1 reduced proliferation in this cancer cell line. It has been shown that inhibition of GLS1 significantly decreased cells, but there was no change in the rate of apoptosis. The cause of this decrease may be through a different pathway other than apoptosis. In this study we have shown that GLS1 inhibition does not induce apoptosis in this cell line, contrary to the literature, and activates the death pathway through a different pathway. We believe that interrupting the glutamine energy pathway for cancer cells will be promising approach for cancer treatment and further studies are needed for this.

Keywords: apoptosis; cell viability; glutamine; GLS1; MDA-MB 231

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