**Small interfering RNAs (siRNAs) based approaches for combination therapy of breast cancer**

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Breast cancer is a high mortality disease and common among women. Based on this, polyurethane-oleic acid based nano-system was developed for the treatment of breast cancer by combining siRNA and curcumin (CUR) to overcome multi-drug resistance by silencing gene expression in cancer cells. For this, TPU-Ole polymer was synthesized. Then TPU-Ole nanoparticles (TPU-Ole NPs) were prepared and the particle size and zeta potential values were found about 170 nm and -27.5 mV. CUR was encapsulated into NPs and cmyc-siRNA was attached to the surface of PLL-TPU-Ole NPs. In vitro release and stability studies were examined at pH 5.0 and 7.4. Agarose gel electrophoresis was realised to test the siRNA condensation capacity. The apoptotic-necrotic effects and gene silencing ability of siRNA-CUR-NPs on L929 and MCF-7 cells were determined by flow cytometry and RT-PCR analysis. As a result, siRNA-CUR-TPU-Ole NPs were quite sucessful to silence the cmyc gene.

***Keywords:*** *TPU, oleic acid, CUR, siRNA, L929, MCF-7*

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