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CD151 shRNA-a promising therapeutic agent to target metastasis of breast cancer

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Breast cancer is the most common cancer in women in India, way ahead of cervical cancer. WHO has predicted that in India by 2015, for every two women newly diagnosed with breast cancer, one is dying of it. Traditional treatments have a very poor prediction because of adverse side effects and intermittence of the disease. Therefore, the development of new protective therapeutic approach is necessary. CD151 play key role in the regulation of migration and adhesive function of metastatic tumor cells by organizing partner proteins like integrins, membrane receptors, signalling molecules and other tetraspanins into tetraspanin enriched micro domains that serve as molecular facilitators. The aim of the present study is to construct shRNA plasmid to target CD151 in breast cancer cell lines. pSilencer- mediated shRNA against CD151 was transiently transfected into MDA-MB 231 and MCF-7 breast cancer cells using Lipofectamine. The expression of CD151 and metastasis was significantly reduced with CD151 shRNA plasmid in breast cancer cells. The results analysed by RT-PCR and Western blot analysis showed the expression of CD151 was two-fold reduced at mRNA and protein level, respectively, in MDA-MB231 and MCF-7 breast cancer cells compared to normal breast epithelial cells with CD151 gene knockdown. CD151 gene silencing using shRNA decreased breast cancer cell proliferation by more than 60% in 48hrs. Transwell migration assay which is used to study the migratory response showed reduction in migration and invasion activity of MDA MB-231 & MCF-7 cells by CD151 gene knock down using CD151 shRNA. These results provide an evidence for CD151 to be a potential marker and help in development of therapeutic agent to counteract invasion and metastasis of breast cancer cells.

Biography

Gayatri Devi. V has completed her post-graduation in Biochemistry from GITAM University. She is currently working as a Junior Research Fellow in Department of Science & Technology (DST) funded project in the Dept. of Biochemistry, GITAM University, Visakhapatnam under the guidance of Dr. Rama Rao Malla.

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