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SALINOMYCIN AS POTENT DRUG TO TARGET CSCS

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Cancer relapse has been an issue in oncology research for more than few decades but author hasn't reached at a solution yet. Their study aims at avoiding the recurrence by making conventional therapies more efficient with adjunct treatment. Cancer stem cells (CSCs) is the root cause for drug/chemo-resistance as these cells have characteristic properties of stem cells, they are quiescent and are highly invasive. Recent research article explored various chemical compounds though high-throughput screening which would selectively target CSCs. Salinomycin is the reported potent drug and we decided to further investigate the same. Colorectal cell lines DLD1, SW620 and breast cancer cell lines MCF7, MDA-MB-231 cells were used for the study. These cells were exposed repeatedly to radiation dosage or treated with IC50 concentration of 5-Flurouracil (5-FU) to generate resistant cell line. Levels of stemness markers like SOX2, KLF4, OCT4 etc. and epithelial-to-mesenchymal (EMT) markers like Snail1, Zeb1, E-cadherin, N-cadherin etc., were observed and were compared with that of untreated cells. There was a significant up regulation in stemness and EMT pathway at transcriptional as well as at protein level which was evaluated through real-time PCR and western blot, immune cytochemistry respectively. At as low concentration of salinomycin as 2μM, these markers were down regulated and functional assays like colony forming assay and flow cytometry analysis of CD133 and CD44-CSC markers corroborated the same. Thus, salinomycin could be potent drug to target CSCs avoid secondary tumor formation. Further understanding of the target mechanism could help us improve the current treatment method.

BIOGRAPHY

Divya Sivanesan is a PhD scholar working in Stem Cell and Molecular Biology laboratory under the guidance of Prof Rama Shanker Verma, Biotechnology Department, IIT Madras. She is final year student and has two publications.

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