

CELL SIGNALING AND CANCER THERAPY & CELL METABOLISM AND CYTOPATHOLOGY

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Delving KS-01 as a novel therapeutic strategy in treating breast cancer

Sourav Taru Saha and Mandeep Kaur
University of the Witwatersrand, South Africa

Cancer cells have an increased need for cholesterol, which is required for cell membrane integrity. Cholesterol accumulation has been described in various malignancies including breast cancer. Cholesterol has also been known to be the precursor of estrogen and vitamin D, both of which play a key role in the histology of breast cancer. Thus, depleting the cholesterol levels in cancer cells is a proposed innovative strategy to treat cancer. Therefore, novel cholesterol-depleting compounds are currently being investigated. KS-01 is a cyclic amylose oligomer composed of glucose units. It solubilizes the cholesterol and is proven to be toxicologically benign in humans. This led us to hypothesize that it might deplete cholesterol from cancer cells and may prove to be a clinically useful compound. Our work provides preliminary experimental evidence to support this hypothesis. We identified the potency of KS-01 in vitro against two breast cancer cell lines: MCF-7 (Estrogen positive, ER+), MDA-MB-231 (Estrogen negative, ER-) and compared the results against two normal cell lines: MRC-5 (Normal Human Lung Fibroblasts) and HEK-293 (Normal human embryonic kidney cells) using cytotoxic, apoptosis and cholesterol based assays. KS-01 treatment reduced intracellular cholesterol resulting in significant breast cancer cell growth inhibition through apoptosis. The results hold true for both ER+ and ER-. These data suggest that KS-01 can prevent cholesterol accumulation in breast cancer cells and is a promising new anticancer agent.

Biography

Sourav Taru Saha is a PhD student working on Breast cancer at the University of the Witwatersrand. The research group's main focus is the link between Cholesterol and Breast cancer. Till now, his research has shown promising results and in 2018 the concept would be tested in vivo. Based on the results, this research might lead to a novel drug in treating Breast cancer.

1575707@students.wits.ac.za

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