Srinivas Baskari et al., J Mol Genet Med 2015, 9:3
http://dx.doi.org/10.4172/1747-0862.C1.010

OMICS International
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3rd International Conference on
Genomics & Pharmacogenomics
September 21-23, 2015 San Antonio, USA

The human autocrine growth hormone (GH) dependent activation of NF-κB p65 (RelA) in Epithelial Mesenchymal Transition (EMT) of mammary carcinogenesis

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Progression of breast cancers is often dependent on hormones. Previous reports have demonstrated that elevated levels of human Growth Hormone (hGH) and/or autocrine hGH expression contributes to breast cancer progression. The association between hormone (Estrogen, progesterone) and NF-κB p65 has been investigated by different scientists with controversial results in ER-positive and ER-negative cell lines. In the present investigation, role of autocrine production of human Growth Hormone (hGH) in the proliferation of mammary carcinoma cells (MCF-7) in vitro and molecular mechanisms responsible for metastatic growth of breast cancer was studied. For this we were stably transfected with an expression plasmid encoding the hGH gene in to MCF-7 cells and these cells (designated MCF-hGH) synthesized hGH in the cell and secreted hGH to the medium. For control purposes, a MCF cell line was generated (MCF-MUT) in which the start codon of the hGH gene was disabled and these cells transcribed the hGH gene without translation to hGH protein. The MCF-hGH cells increased the transcription factor NF-κB p65 which modulates the expression of genes involved in cell proliferation, differentiation, apoptosis and metastasis. Our results indicate that the autocrine Growth Hormone (GH) increases NF-κB p65 activity in breast cancer cell lines by RT-PCR data and western blot when compared with MCF-MUT cells. In addition to that, GH-dependent increase in NF-κB p65 expression results in loss of P- and E-cadherins in breast cancer cell line. This substantiate the hypothesis that certain breast cancer cells rely on NF-κB p65 for aberrant cell proliferation and simultaneously avoid apoptosis thus implicating activated NF-κB p65 as a therapeutic target for breast cancers. Taken findings together further our understanding of the complex actions of autocrine hGH and NF-κB p65 in Epithelial Mesenchymal Transition (EMT) of breast cancer has to be investigated.

Biography

Srinivas Baskari is a PhD Scholar in Osmania University. He qualified Basic Science Research Fellowship (BSR) in 2013. He also qualified GATE in 2012 with 87 percentile. He worked in a project on "Isolation and Characterization of Active Compound with Significant Anti-Bacterial Activity Extracted from Radish" under Dr Uma in JNTU at Hyderabad as a part of MSc thesis.

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