World Academy of Science, Engineering and Technology
International Journal of Pharmacological and Pharmaceutical Sciences
Vol:9, No:12, 2015

SOCS1 Inhibits MDR1 in Mammary Cell Carcinoma Reverses Multidrug Resistance

Authors : Debasish Pradhan, Shaktiprasad Pradhan, Rakesh Kumar Pradhan, Gitanjali Tripathy

Abstract : Suppressors of cytokine signalling (SOCS1), a newly indentified antiapoptotic molecule is a downstream effector of the receptor tyrosine kinase-Ras signalling pathway. The current study has uncovered that SOCS1 may have wide and imperative capacities, particularly because of its close correlation with malignant tumors. To investigate the impact of SOCS1 on MDR, we analyzed the expression of P-gp and SOCS1 by immunohistochemistry and found there was a positive correlation between them. At that point, we effectively interfered with RNA translation by the contamination of siRNA of SOCS1 into MCF7/ADM breast cancer cell lines through a lentivirus, and the expression of the target gene was significantly inhibited. After RNAi, the drug resistance was reduced altogether and the expression of MDR1 mRNA and P-gp in MCF7/ADM cell lines demonstrated a significant decrease. Likewise, the expression of P53 protein increased in a statistically significant manner ($p \leq 0.01$) after RNAi exposure. Moreover, flow cytometry analysis uncovers that cell cycle and anti-apoptotic enhancing capacity of cells changed after RNAi treatment. These outcomes proposed SOCS1 may take part in breast cancer MDR by managing MDR1 and P53 expression, changing cell cycle and enhancing the anti-apoptotic ability.

Keywords : breast cancer, multidrug resistance, SOCS1 gene, MDR1 gene, RNA interference
Conference Title : ICPP 2015 : International Conference on Pharmacy and Pharmacology
Conference Location : Bangkok, Thailand
Conference Dates : December 17-18, 2015