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Recombinant human interleukin 24 reverses Adriamycin resistance in a human breast cancer cell line

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The major cause of multidrug resistance is over-expression of membrane P-glycoprotein (P-gp). We investigated the effect of recombinant human interleukin 24 (rhIL-24) on the Adriamycin (ADM)-resistant human breast cancer cell line MCF-7/ADM. Methods: The cytotoxicity of rhIL-24 and ADM was determined by 3-[4,5-dimethylthiazol-2-yl], 5-diphenyl tetrazolium bromide (MTT) assays. The expression of P-gp was assessed by confocal microscopy and Western blot analysis. Results: The IC50 values for rhIL-24 in MCF-7/wild-type and MCF-7/ADM cells were 0.17 and 14.6 mM, respectively. The IC50 value of Adriamycin in MCF-7/ADM cells decreased in a dose-dependent manner when rhIL-24 was used. The resistance modulating factor (RMF) was directly proportional to the dose of rhIL24. ADM accumulation increased while P-gp expression decreased at a low dose (4 mM) of rhIL24 in MCF-7/ADM cells. The expression of P-gp was decreased at 4 mM in confocal microscopy and western blot analysis. Conclusions: rhIL-24 circumvented the drug-resistance of MCF-7/ADM cells via activation of the transcription factor Stat 3. rhIl24 has potential to act as a P-gp inhibitor to reverse Adriamycin resistance in breast cancer.

Biography

Muhammad Imran Amirzada has completed his Master of Science from Liverpool John Moores University, UK and Ph.D from Jiangnan University, P. R. China. Currently he is serving as Assistant Professor of Pharmacy, COMSATS Institute of Information Technology, Abbottabad, Pakistan. He has published research papers in reputed journals related to Recombinant Human Therapeutic Protein production. He has successfully win a project from Higher Education Comission (HEC) Pakistan for Recombinant Human Interleukin 24 with Doxyrubicin formulation

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