Functional Analysis of G-protein Coupled Receptor 56 in K562 Cell

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ABSTRACT

Heterotrimeric G-protein – coupled receptors (GPCRs) are the largest family of cell surface receptors, accounting for more then 1% of the human genome. GPCRs transduce extracellular signals from environmental factors, ex odorants and tastants, and affect celluer physiology, and even gene expression profiles in cell. The function of GPCR56 is controversial. Contrast to normal tissues, the expression of GPCR56 in cancer cells is relatively high, that infer GPCR56 as the potential carcinogenesis factor. But in the melanin tumour cells, an opposite result was reported. Overexpression GPR56 inhibits melanoma tumor growth and metastasis, and reducing GPCR56 promites tumour progress. GPCR56 was 4 times down regulated in leukemia model cells, K562 cell, as compared with clinical samples. We proposed that the expression of GPCR56 is either against the Leukemia development or is leading cell differentiation. In both cases, the over-expression of the GPCR56 may benefit the leukemia patients. To define the function of GPCR56, over-expression and gene knock down of the GPCR56 in K562 cells were studied. The growth of K562 cells was not affected by the expression of GPCR56 and promegakaryocytic phenotype were increased. To further investigation the function of GPCR56, the expression of cluster of differentiation makers (CD markers) of erythroblast (β -globin, γ -globin), granulocyte (CD13, CD33), monocyte (CD14, CD68), megakaryocyte (CD41, CD61) were detected by RT-PCR. Among these, γ -globin, CD33, CD41 and CD61 were up-regulated, β -globin, CD13, CD14 and CD18 were not affected. Put these together, GPCR56 may lead K562 cells or participate in the pathway to megakaryocyte. Key Words: Heterotrimeric G-protein – coupled receptors, K562 cell, megakaryocyte

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