A Novel Peptide Drug as a Therapeutic in Sickle Cell Anemia

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Sickle cell anemia (SCA) is recessive autosomal inherited life-threatening hemoglobinopathy. Normally the average life of RBC is 100-120 days in a healthy human whereas, it is as low as 4-5 days in case of SCA patients. SCA patients are immune-compromised and have increased susceptibility to infections.Various Reports projects that there is impaired IgM response of B cells and B cell receptors of SCA patients. Further, there is limit of depth insights on B cell studies in case of SCA and its therapeutics. This study was aimed to check the therapeutic effect of a novel peptide drug (RS) on transformed SCA B lymphocyte cell line SCA treatment. RS has pleiotropic effect and has important role in angiogenesis, cell regeneration, cell migration. Transformed SCA B lymphocyte and normal Daudi cell lines were used for the study. Various dose of RS was optimized on SCA B lymphocyte cell line using WST-8 cell proliferation assay. The cells were challenged with RS and LPS alone or in combination of both to understand the protective nature of RS. CD19 expression and IgM secretion were enumerated using flow cytometry and ELISA, respectively. Further, the total antioxidant enzymes level and gel activity of SOD, GPx, and Catalase were checked on SCA B lymphocytes. Results suggest that RS show proliferation of SCA B cells alone and in combination with LPS and RS. Also the surface expression of CD19, IgM secretion and antioxidant enzymes levels increases when cells are treated with RS in presence of LPS. Conclusion: RS helps SCA B lymphocytes in multiple ways to combat against infection and protect the cells from harmful ROS. Therefore, looking at the advantageous properties of RS, I envisaged that RS can act as a therapeutic drug to treat the symptoms of SCA.

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