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Thwarting PTEN expression by siRNA, augments HL-60 cell differentiation to neutrophil-like cells by DMSO and ATRA and reduces NETosis

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Abnormal cell differentiation in particular suppression of terminal cell differentiation, exist in all tumors. Therapeutic intervention to restore terminal differentiation (differentiation therapy) is a very attractive way to treat cancer, especially leukemia. A variety of chemicals stimulates differentiation of leukemic cells such as dimethyl sulfoxide (DMSO) and all-trans retinoic acid (ATRA). Tumor suppressor genes have a vital role in the gateway to terminal cell differentiation. In this study we inhibited PTEN tumor suppressor gene expression by siRNA to investigate the effect of potentiating cell survival and inhibiting apoptosis on HL-60 cell differentiation by DMSO and ATRA at the same time we looked at NETosis. Our results show that PTEN siRNA increases HL-60 cell differentiation in the presence of DMSO and ATRA. At the same time the presence of siRNA hampered accumulation of apoptotic cells during incubation. PTEN siRNA reduced Net formation by differentiated neutrophils. Our study suggests potential usage of differentiation therapy in PTEN mutated AML leukemia.

Biography

Shahram Teimourian has completed his PhD from Tehran University and Postdoctoral studies from Oxford University School of Medicine. He is the Director of Medical Genetics and Biotechnology Department. He has published more than 25 papers in reputed journals and has been serving as an Editorial Board Member of *Edorium™ Journal of Molecular Biology* and *World Journal of Hematology*.

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