A Yilmazer et al., J Stem Cell Res Ther 2017, 7:3(Suppl)
http://dx.doi.org/10.4172/2157-7633.C1.023

Transfection of human melanoma cells with reprogramming factors (OKSM) alters cancer-related pathways and tumorigenicity

A Yilmazer and **H Taheri**
Ankara University, Turkey

Cancer cells can acquire pluripotent character by forced expression of reprogramming factors, leading to the deletion of epigenetic memory and resulting in decreased tumorigenicity. However, studies on cancer cell reprogramming are limited and contradictory. In this study, the main aim is to investigate the effect of cellular reprogramming on the tumorigenicity of cancer cells. MDA-MB-435, G361 human melanoma cells and human primary melanocytes were transfected with Sendai viral vectors encoding the OKSM factors. After culturing, colonies have emerged in the reprogrammed melanocytes whereas; cluster of cells with distinctive morphology were observed in the transfected cancer cells. OKSM factors were upregulated in both cancer cells and primary melanocytes. All pluripotency markers showed increased expression in the reprogrammed melanocytes. However, only Nanog expression was observed in the transfected cancer cell lines. When embryoid bodies were formed, reprogrammed melanocytes showed expression of all lineage markers. Transfected MDA-MB-435 overexpressed FGF-5 and downregulated Brachyury; whereas G361 overexpressed both FGF-5 and Brachyury, compared to naive cancer cells; indicating that there were changes in epithelial to mesenchymal transitions. In order to understand the tumorigenicity of these resulting cells, sensitivity of chemotherapeutic agents, response to oxidative stress and invasion potential were compared. MDA-MB-435 cells were shown to decrease tumorigenicity after transfection with OKSM factors; whereas G361 increased tumorigenicity. These results suggest that even though transfection of cancer cells with OKSM factors were not able to fully reprogram cells towards pluripotency, it changed the tumorigenicity and modified cancer related pathways.

Biography

A Yilmazer is working as an Assistant Professor in the Biomedical Engineering Department of Ankara University. She has been the Vice Director of the Stem Cell Institute of Ankara University since December 2016. She completed her MSc degree in Cancer Immunotherapy from the University of Nottingham (UK) and obtained her PhD in the Nanomedicine Lab based in the School of Pharmacy, University College London. She has published papers on nanomedicine, cancer therapy and cellular reprogramming in various distinguished journals.

Acelya.Yilmazer.Aktuna@ankara.edu.tr

Notes: