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Trans-differentiation of 3T3L1 mouse adipose cells to epithelial-lineage

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Damages in skin, airway, mammary gland, testes, pancreas, intestine and other epithelial wall is very common in today's clinical pathology. Therapeutic use of ASCs from the subcutaneous adipose tissue could be a way to repair the damages in epithelium. Aiming at epithelial differentiation of 3T3L1 mouse adipose cells, we investigated the effect of KGF and BMP-6 on 3T3L1 cells to differentiate into epithelial lineage. KGF successfully induced epithelial-specific genes and related transcript expression on 3T3L1 cells. In contrast, BMP-6 resulted in down regulation of all epithelial-specific genes and related transcript expression. In KGF based treatment, seven genes (K8, K18, EpCAM, K5, K14, SMN1 and α-SMA) out of total eight genes were significantly ($p<0.05$/$p<0.01$) up regulated. Immunostaining and immunoblotting also revealed significant ($p<0.05$/ $p<0.01$) expression of several epithelial-specific surface antigens and transcripts. Moreover, ayoub shaklar staining (specific to keratin) of KGF treated cells showed significant ($p<0.01$) amount of keratin formation evinced with the intensity % of stain compared to the control and BMP-6 treated groups. Conclusively, KGF was observed to have potential to differentiate adipose cells to epithelium and therefore this regimen could be used to expand cells either invitro or invivo to treat epithelial loss in animals and humans.

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