conferenceseries.com

JOINT EVENT ON

6th European Conference on

Predictive, Preventive and Personalized Medicine & Molecular Diagnostics

&

2nd World Congress on Human Genetics

September 14-15, 2017 | Edinburgh, Scotland

Experimental analysis of differentiated umbilical cord derived mesenchymal stem cells to ostegenic cells: a pathway for bone tissue engineering

Zahara Hassan Mansoor, H Goonesekara and V Dissanayake University of Colombo, Sri Lanka

To derive MSCs from the human UC Wharton's Jelly (WJ) and osteogenic differentiation was my main objective. Umbilical cord (UC) is readily available without ethical constraints, showing high proliferation rate and osteogenic potential. Following obtaining ethical approval, five UCs from healthy mothers undergoing elective Caesarian sections were collected, cleaned with phosphate buffered saline, removed blood vessels, digested WJ in 0.5% collagenase 2-3 hours/0.2% collagenase overnight and cultured in DMEM supplemented with 10% FBS, 1% L-glutamine and 1% Pen Strep at 37oC in 5% CO₂. Cells are passaged at 70% confluency. At fourth passage (P4), osteogenic differentiation medium was added following incubation. Culture maintained for 21 days and cells were stained with 2% Alizarin red and von Kossa stains. MSCs were determined and characterized using Trypan blue test, Flow cytometry, RT-PCR and karyotypic analysis. Findings suggested that cells were positive for CD90, CD73 and CD105 and negative for CD34 and CD45 markers expressing *Oct-4* and *G6PD* genes. Karyotypes depicted were normal. Alizarin red stain gave bright orange red and von Kossa stain gave black brown deposits demonstrating the presence of extracellular calcium deposits. Conclusion & Significance: UC-MSCS serves as a suitable source for osteogenic regeneration. Gene expression demonstrated the embryonic origin of the MSCs which maintained genomic stability up to P4 stage. So my initiative stem cell research in Sri Lanka improves the therapeutic potential in bone defects and opens up new perspectives for bone tissue engineering.