Gabriele Ceccarelli et al., J Tissue Sci Eng 2017, 8:4(Suppl)
DOI: 10.4172/2157-7552-C1-039

Behaviour of human mesenchymal-periosteal cells grown in contact with different scaffolds used in dentistry

Gabriele Ceccarelli, Rossella Presta, Laura Benedetti, Flavio Ronzoni, Saturnino Marco Lupi and **Maria Gabriella Cusella De Angelis**
University of Pavia, Italy

Bone regeneration is currently one of the most important challenges for regenerative medicine and it is considered an ideal clinical strategy in dentistry. Bone resorption of alveolar crest occurring after tooth extraction leads to several risks for future treatments, including dental implants. For this reason, alveolar ridge preservation (ARP) has become a key component of contemporary clinical dentistry. The main aim is to keep the shape and the size of the bone socket after tooth extraction allowing bone healing and installation of endosseous implants in a later time. For this reason, different types of organic (such as collagen) or inorganic biomaterials such as manufactured polymers (polyglycolic acid - PGA, polylactic acid - PLA, and polycaprolactone) are used in surgical techniques for dental defects. The goal of this study was to compare different scaffolds based on PLGA (Fisiograft®), PLGA + Hydroxyapatite (Alos®) and type-I Collagen (Sombrero®) in an *in vitro* model of Tissue Engineering. Human MSC cells derived from periosteum were cultured and characterized by FACS for the expression of mesenchymal antigens (CD90, CD105, CD29). Cells were successively seeded on scaffolds and, at different time points, adhesion and cell differentiation were analyzed by morphological and molecular biology analysis. Results showed the proliferation induction of Sombrero® material and the osteoconductive potential of PLGA+HA, as demonstrated by molecular biology analysis on osteogenic genes and proteins. Further studies will be focused on combined scaffolds, that matched the resorbable capability of PLGA-HA and the capacity of organic collagen to promote initial engraftment and cell proliferation.

Biography

Gabriele Ceccarelli is a Post-doc Researcher at the University of Pavia, at the Department of Public Health, Experimental Medicine and Forensic, Human Anatomy section Unit. He has obtained his PhD in Bioengineering and Bioinformatics (2011) and he is involved in several Tissue Engineering and Regenerative Medicine research projects. His current research interests include stem cells for skin and bone repair. He has published more than 20 papers in reputed journals.

gabriele.ceccarelli@unipv.it

Notes: