

5th International Conference on

Tissue Engineering & Regenerative Medicine

September 12-14, 2016 Berlin, Germany

3D collagen-based biohybrids for soft tissue regeneration

Madalina Georgiana Albu Kaya

INCDTP-Leather and Footwear Research Institute, Romania

A promising solution for soft tissue regeneration is tissue engineering, a multidisciplinary field of research which involves the use of biomaterials, growth factors, and stem cells in order to repair, replace, or regenerate tissues and organs damaged by injury or disease. The success of tissue engineering depends on the composition and microstructure of the used scaffolds. Ideally, scaffolds have to be similar to natural tissues. Collagen is the major component of the extracellular matrix of most soft tissues. As a natural molecule, collagen possesses a major advantage in being biodegradable, biocompatible, presenting low antigenicity and being easily available and highly versatile. Extracted as aqueous solution or gel, we processed type I collagen with different other natural polymers like sericin, hyaluronic acid, chondroitine sulfate, sodium alginate in three-dimensional (3D) forms such as hydrogels or matrices (spongy) by cross-linking or freeze-drying respectively, and successfully used as scaffolds. Human adipose derived stem cells (hADSC), 3T3-L1 preadipocytes, human epidermal keratinocytes and dermal fibroblasts are only some type of cells that proved their ability to build biohybrids in combination with the obtained collagen-based scaffolds in a culture system. These findings indicate that the integration of scaffold with cells *in vitro* provides a potential source of living skin or adipose tissue for grafting *in vivo*.

Biography

Madalina Georgiana Albu Kaya has completed her PhD in Chemistry from Bucharest University, Faculty of Chemistry and Post-doctoral studies from Osaka University, Institute for Research Protein, Osaka, Japan. She is the Head of Collagen Department from INCDTP-Leather and Footwear Research Institute. She has published more than 70 papers in SCI journals, 10 books and book chapters, 17 patents and patent applications (awarded with 10 Gold Medals and Special Awards), being involved in over 70 research projects since 2001 to present.

albu_mada@yahoo.com

Notes: