

## **C29**

### **Synthetic Peptides for Heart Valve Tissue Engineering: Smooth Muscle Cells Adhesion Tests**

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#### **Objectives:**

One of the key aspect of the modern medicine is the development of biomedical procedure for the reconstruction and/or substitution of organs and damaged tissues. Even the important advances in reconstructive surgery are far from creating a lifelong artificial prosthesis or transplants. Some features have not been solved yet, like infections occurrence, rejections and scarce number of donors. An appealing strategy for the creation of a biomimetic material is the use of chemically synthesized peptide sequences that retain the biological activity. Therefore they could be able to promote the first step of cellular adhesion before the phenomena of cells proliferation, migration and differentiation could occur into an acellular valve scaffold.

#### **Method:**

Different concentrations of 3 synthetic peptides have been used: (352-360)HVP (human vitronectin), (GRGDSP)<sub>4</sub>K (motifs of ECM proteins) and SDF1 $\alpha$ T (chemokine). These were used for coating 96-wells non-tissue culture plates and incubated later with smooth muscle cells (with and without SFB). The cell adhesion to the treated surface was quantified using the hexosaminidase reaction described by Landegren, using human fibronectin as positive control.

#### **Results:**

A clear increase of adhesion of smooth muscle cells was demonstrated when using the peptide that contains RGD sequence in presence or absence of SFB as well.

#### **Conclusions:**

It was established a relatively simple methodology to evaluate the capacity of cell adhesion on non treated plastic surface, coated with synthetic peptides. The determination of the early interaction of cell-surface on implantable biomaterials could provide an useful information concerning the repopulation process of damaged or decellularized tissues.