

ORIGINAL RESEARCH

Cell and Organ Transplantology. 2020; 8(2):112-116.

doi: 10.22494/cot.v8i2.110

Biocompatibility analysis of the decellularized bovine pericardium

Sokol A.^{1,2}, Grekov D.^{1,2}, Yemets G.¹, Galkin O.², Shchotkina N.^{1,2}, Rudenko N.¹, Yemets I.¹

¹*Ukrainian Children's Cardiac Center, Kyiv, Ukraine*

²*Igor Sikorsky Kyiv Polytechnic Institute, National Technical University of Ukraine, Kyiv, Ukraine*

e-mail: cardiottissue@gmail.com

Abstract

The decellularized bovine pericardium and its potential use as a natural scaffold is a promising approach in the field of tissue engineering and regenerative medicine. The reaction of the host toward decellularized scaffolds depends on their biocompatibility, which should be satisfied being before applied in clinical use.

Purpose: *to evaluate the biocompatibility of the extracellular matrices, which were decellularized by trypsin enzyme and anionic sodium dodecyl sulfate (SDS) detergent.*

Material and methods. *Pericardial sacs were acquired from 12-18 months' age bulls. Tissue decellularization was performed by using 0.25 % Trypsin solution and 1 % ionic SDS for group I and 0.1 % SDS for group II samples. The implantation was performed on Wistar rats. The tissue samples were stained with hematoxylin & eosin, Congo red and Masson's Trichrome for histological analysis.*

Results. *In group 1 in 3 months after subcutaneous implantation in rats we noticed the inflammation in surrounding tissue and degradation of the implant. Under the same conditions in animals of group 2 implant replacement with growing immature connective tissue was noted. Bio-implant of this group did not degrade, moreover it's integrated to the tissues of experimental rats.*