(8) Materials & Nanoscience:

1761 - Development of silk fibroin/polyurethane composite materials for degradable cardiac patch

View Session Detail

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Abstract Body: We evaluated the availability of silk fibroin (SF)/Pellethane®, a kind of polyurethane, composite material as a biodegradable cardiac patch. The fiber mats with the different ratio of SF/Pellethane® blended were woven from the 1,1,1,3,3,3-hexafluoro-2-propanol (HFIP) solution by using of electrospinning method. These fiber mats were confirmed to be composed of approximately 1 μm fibers by SEM analysis. From the tensile tests, each fiber mat was shown the ratio-depended changes of the values of breaking strength, elongation at break, and Young modulus. To evaluate the function of the SF/Pellethane® composites as a cardiac patch, we implanted SF/Pellethane®=5/5 composite patch into abdominal aorta in rats for 4 weeks. The implanted patch showed cell infiltration but didn't show collapse by the blood pressure or thrombus formation. These results indicated that the SF/Pellethane®=5/5 composite patch have some good functions enough to use for a cardiac patch. In the poster presentation, we will report about the detailed analyses of the stress-strain tests and the transplantation experiments.
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