



I Ogólnopolska
Konferencja
NanoBioTechMedyczna

nanobiomedica

Książka abstraktów

P10: Biodegradable scaffold for anterior cruciate ligament (ACL) reconstruction and regeneration

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Keywords: ligament, 3D printing, tissue engineering

The Anterior Cruciate Ligament (ACL) is one of the major knee ligaments, one which is greatly exposed to injuries. According to the British National Health Society, ACL tears represent around 40% of all knee injuries. [1].

The aim of this work is to develop a biodegradable, innovative graft for reconstructing and regenerating ACL after its injury.

PLCL and PLGA are used in the process of 3D printing to obtain grafts of optimized architecture. Electron beam irradiation is used in two doses: 15 kGy and 25 kGy for sterilization. 3D printed samples sterilized with those doses and non-sterilized control were analysed in phosphate buffer saline (pH 7.4, 37°C) over 90 days. Those conditions mimics the in-vitro environment conducted. In selected timepoints at which samples are weighed and their molecular mass is measured with gel permeation chromatography.

We conclude, degradation study showed how molecular weight loss is progressing over 90 days in sterilized material. We observed the implant does not disintegrate in 90 days.

The research leading to these results received funding from the Norway Grants 2014–2021 via the National Centre for Research and Development number. NOR/SGS/BioLigaMed/0272/2020.

References

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