

## **In vitro testing of an ability of nanofibrous material to activate immune cells and testing of cytotoxicity of nanofibrous material**

PCL - Polycaprolactone

PCL material was tested in a form of cotton-like nanofibrous structure. PCL material intended for these tests was produced by the method of forcespinning. Both the production and testing were carried out in sterile conditions.

Basic properties of PCL:

- Biodegradable polyester
- Low melting point of approx. 60° C
- For application approved by Food and Drug Administration (FDA)
- Possibility of production in both 2D and 3D structure

Application options for PCL:

- Biodegradable wound stitching
- Drug-delivering and drug-releasing systems
- Tissue engineering

Aim of testing:

- In vitro verification of cytotoxicity and ability to activate immune cells to anti-inflammatory behaviour in nanofiber-material covers.
- Acquiring of documents for further pre-clinical tests of biocompatibility and functionality for the purpose of development of pharmaceutical agent intended for aimed anti-tumour therapy.

Methods of verification of cytotoxicity with affection by tested material

- Measurement of cell viability (metabolic activities)
- Proliferation (multiplication) of cells

Methods of evaluating the increase of production of pro-inflammatory molecules - cytokines

- ELISA
- Luminex

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*"We make nanofibers"*



**Conclusion:**

PCL material insoluble in water was tested by method of infusions

- Didn't show cytotoxic effects towards dermal fibroblasts
- Didn't show cytotoxic effects towards hepatocytes of HepG2 line
- Didn't stimulate leukocytes to produce pro-inflammatory cytokines
- Possible to consider as non-immunogenic
- Possible to further test in pre-clinical studies for the purpose of proving its biocompatibility and functionality

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