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E-spinning nano firbers of PBCA for biomedical application – state of the art and first results

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Nano-fibres are very interesting products in the biomedical field, due to their very high porosity and surface area. These characteristics allow them to be used as drug delivery systems, for the promotion of wound healing as well as for tissue engineering of different tissues such as blood vessels, bones and muscles. There are only some applications of e-spinning technique to produce nano-fibres based on PBCA. PBCA are biodegradable polymers with a high degradation rate. The application fields are wound healing and drug delivery systems. The aim of our work is in a first step to produce nano fibres on PBCA and to test their biocompatibility in contact with fibroblasts in-vitro. A laboratory set-up for e-spinning was developed and with two in molecular weight different PBCA solutions nano fibres were produced. With help of scanning electron microscopy their structures was assessed. The biocompatibility was tested direct in contact with fibroblasts. After 1, 3, 7, 14 days the cells were stained (life – dead staining) for observation with help of CLSM. In summary a set-up could be manufactured for producing nano- fibres of PBCA on different carriers with an average diameter of 500 nm with round or flat shape. The in-vitro tests reveal a high biocompatible behaviour with a surprisingly good cell growth onto the fibre meshes.