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In vitro and *in vivo* studies of dextran-based materials for peripheral nerve regeneration

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Since the end of the XIX century, different strategies concerning peripheral nerve regeneration have been reported. As this pathology is very common, several techniques have been used to achieve functional recovery of the nerve. The use of guidance tubes or nerve conduits which are sutured to both extremities of the injured nerve has been the approach showing the most promising results. The aim of this work is to prepare a polymeric guide-tube able to solve, or mitigate, the problems presented by some commercial products with FDA clearance. In this work, dextran was chosen as the polymeric material to prepare the guide-tube. Dextran is widely used in biomedical applications due to its inherent biocompatibility and due to the easiness in tailoring its properties by chemical modifications. For the purpose of this work, different formulations based on dextran were prepared and the materials were submitted to *in vitro* and *in vivo* tests to access their biocompatibility (NP EN ISO 10993- Biologic evaluation of biomedical devices). Preliminary results indicate that these materials are non-cytotoxic and do not elicit any acute inflammatory response when implanted *in vivo*, meaning that the dextran based materials can be safely used in biomedical applications, namely in peripheral nerve regeneration.

Biography

Catarina Pinho graduated from the Faculty of Science and Technology of the University of Coimbra, Portugal, in Materials Engineering with focus on Biomaterials, in 2012. Currently, she is doing her PhD in Advanced Materials and Processing – AdvMaTech- between the University of Coimbra and the University of Oporto, Portugal. Her research work deals with the development of new polymers to be used in peripheral nerve regeneration.

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