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Linear and branched polyethynimines for skin regeneration treatment: *In vitro* study

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Skin regeneration is a huge issue over the last few decades. As a result of burns, trauma, diabetes and several other diseases, skin grafts are needed, aiming the regeneration of the injured body site. In this paper, we present a new alternative approach, a comparison of linear and branched Polyethylenimine. This research presents the viability and biocompatibility of LPEI and BPEI loaded with polycaprolactone (PCL) scaffolds. SEM images show that the scaffolds developed sized between 74±419 nm. Contact angle assay demonstrated high hydrophobicity for all mats, which could overcome by surface modification, plasma treatment, helping the hydrophilicity of the mats, providing excellent of the cells adhesion to the surface of the scaffolds. We demonstrate the biocompatibility of the scaffolds developed by electrospinning techniques, followed by *in vitro* tests with Human Dermal Fibroblast (HDF), by using MTT assay to determine the biocompatibility with the cells, and the Sirius red collagen to determine the relies profile after six days of cell incubation. The results have shown that all the scaffolds developed to have good cell adhesion, cell biocompatibility for HDF, good collagen release profile for all mats, increased release on the day 10. This primary *in vitro* study suggest that the mats developed may increase the skin regeneration process, therefore can be an emerging technology for skin regeneration.

Biography

Lucas B Naves is currently pursuing his PhD at the University of Minho, Portugal at the Center for Science and Textile Technology. Under supervision of Prof. Luis Almeida, he is also doing his research at the National University of Singapore (NUS). He is also working at the Center for Nanofiber and Nanotechnology under the supervision of Prof. Seeram Ramakrishna. His research leads to the development of biomaterials for skin tissue engineering, focusing on the treatment of less invasive approach for melanoma skin cancer.

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