CARTILAGE REGENERATION APPROACH BASED ON SQUID CHITOSAN SCAFFOLDS: *IN-VITRO* ASSESSMENT

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During the past decades, marine organisms have been the focus of considerable attention as potential source of valuable materials. For instance, chitosan is a biopolymer with high potential in the biomedical field and can be produced from crustacean shells and squid pens [1]. In this sense, we propose the use of chitosan to produce scaffolds for regenerative medicine purposes. An alkaline solution was used to deproteinize squid pens and isolate β-chitin (Chaussard 2004), which was further converted into chitosan through a deacetylation reaction. Chitosan was then processed into porous structures by freeze-drying [3], where chitosan solutions (4%) were submitted to different freezing temperature of -80ºC and -196ºC. The produced structures were further submitted to neutralization methods with 4% NaHO, including in some cases a pre-washing step using ethanol/water solutions (100:0; 90:10, 80:20; 70:30 and 50:50) [4]. The morphology of scaffolds produced using either squid or commercial chitosan revealed a lamellar structure, independent of the source and/or freezing temperature. All chitosan scaffolds produced exhibited no-cytotoxic behaviour over L929 cells. To test the *in vitro* functionality of the scaffolds, cells from the mouse chondrogenic cell line ATDC-5 were seeded in the scaffolds and cultured for different time periods. Scaffolds made from squid chitosan were shown to promote better cell adhesion than commercial chitosan scaffolds and comparable or better cell proliferation. This demonstrates that squid chitosan is a valuable alternative to produce scaffolds for different applications in regenerative medicine, namely the regeneration of cartilage.

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