ANTIMICROBIAL CHITOSAN FOAMS WITH AND WITHOUT POLYESTER BLENDING AS TISSUE ENGINEERING SCAFFOLDS

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Due to its many interesting properties and its high availability at low costs from waste products (i.e. the shell of crustaceans), chitosan is the material of choice for many biomedical applications. In tissue engineering, specifically, chitosan is ideal due to its biocompatibility, intrinsic antimicrobial activity and ability of regulating the coagulation phenomena. However, a good material is not enough and the engineering of proper interconnected porosity is a key feature in the fabrication of scaffolds for tissue engineering applications. The morphology gives crucial stimuli, while the interconnectivity ensures the migration of cells and blood vessels in the inner districts of the scaffold. In this study we propose the development of chitosan foams with interconnected pores by the mean of freeze-drying. These foams are further modified by various routes in order to give them strong antibacterial capability without jeopardizing their cytocompatibility. The possibility of producing antibacterial foams by blending chitosan and polyesters will be presented. In-depth characterization is performed to investigate the morphological, physicochemical and biological properties of so produced scaffolds.