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DEGRADATION STUDY OF PLGA/HAp/b-TCP ELECTROSPUN MEMBRANES

Dos Santos, V.I.(1); Merlini, C.(1); Aragones, A.(1); Cesca, K.(1); Fredel, M.C.(1);
(1) UFSC;

Membranes that allow the promotion of a space for bone reconstruction are essential on the cases of critical size defects. Nevertheless, available membranes are usually composed of materials of biological nature that degrade too fast. To overcome this difficulty, biodegradable electrospun membranes of synthetic polyesters have been widely studied due to their mimetization of the bone extracellular matrix and controllable degradation rate, on the case of PLGA (poly(lactic-co-glycolic acid)). Therefore, this study aimed to evaluate the in vitro degradation of PLGA/HAp (hydroxyapatite)-b-TCP (b-tricalcium phosphate) electrospun membranes in addition to the aspects that influence and are influenced by degradation. Results showed that degradation occurred slowly due to the crystallinity degree, reaching only 10% of mass loss after 60 days. Porosity degree did not influence on mass loss of the membranes. Residual accumulations attributed to the redistribution of polymer mass were noted on the micrographs. Overall and surprisingly, fiber diameters after degradation were higher than before. This was associated to the merging of small unstable degraded fibers into larger combined fibers, which were confirmed through micrographs. Results evidence the potential of tunable degradation rate of PLGA through the crystallinity degree, attending the so important adequate degradation profile of membranes for guided bone regeneration.