

Hydrogel Based on Cellulose Acetate Used as Scaffold for Cell Growth

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Abstract : A hydrogel from cellulose acetate cross linked with ethylenediaminetetraacetic dianhydride (HAC-EDTA) was synthesized by our research group, and submitted to characterization and biological tests. Cytocompatibility analysis was performed by confocal microscopy using human adipocyte derived stem cells (ASCs). The FTIR analysis showed characteristic bands of cellulose acetate and hydroxyl groups and the tensile tests evidence that HAC-EDTA present a Young's modulus of 643.7 MPa. The confocal analysis revealed that there was cell growth at the surface of HAC-EDTA. After one day of culture the cells presented spherical morphology, which may be caused by stress of the sequestration of Ca^{2+} and Mg^{2+} ions at the cell medium by HAC-EDTA, as demonstrated by ICP-MS. However, after seven days and 14 days of culture, the cells present fibroblastoid morphology, phenotype expected by this cellular type. The results give efforts to indicate this new material as a potential biomaterial for tissue engineering, in the future in vivo approach.

Keywords : cellulose acetate, hydrogel, biomaterial, cellular growth

Conference Title : ICPMSE 2018 : International Conference on Polymer Materials Science and Engineering

Conference Location : Dublin, Ireland

Conference Dates : July 23-24, 2018