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P.S.E.24.

SCANNING ELECTRON MICROSCOPY STUDY OF CHANGES IN NANOPARTICLES SURFACE UNDER *IN VITRO* SIMULATED PHYSIOLOGICAL CONDITIONS

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In this study we observed the changes in surface of nanoparticles of two different nanomaterials, cobalt-substituted hydroxyapatite (CoHAp) and calcium phosphate/poly-(DL-lactide-co-glycolide) (CP/PLGA) that occurred under simulated physiological conditions *in vitro*. Both nanomaterials were incubated in an appropriate volume of Dulbecco's Modified Eagle Medium (DMEM) for 3 days at 37 ^{0}C and then the medium was removed and materials were dried. Surface changes of nanoparticles were studied by scanning electron microscopy (SEM). Results of SEM analysis show that changes in the size and shape of the nanoparticles took place. These changes can be explained by interactions of nanomaterials with DMEM. In the case of CP/PLGA it was probably the result of polymer degradation and changes in CoHAp nanoparticles were probably the result of ion exchange.

P.S.E.25.

GRAFT-COPOLYMERS OF CHITOSAN AND LACTIDE: SOLID-STATE SYNTHESIS AND APPLICATION FOR TISSUE ENGINEERING

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Modification of chitosan, a natural linear polysaccharide, possessed a high potential for biomedical applications is widely proposed to increase its solubility in different mediums as well as to extend its applicability in tissue regeneration and drug delivery systems. In this research, grafting of L,D-lactide side chains onto chitosan have been carried out in a twin-screw extruder under conditions of shear deformation and pressure. Fractional and elemental analysis in combination with IR analysis and GPC showed that processing at different chitosan/L,D-lactide molar ratio and temperature of extrusion leads to formation of graft copolymers with degree of substitution of chitosan amino groups up to 0.41 and degree of lactide polymerization up to 10. The prepared derivatives were used for fabrication of macroporous hydrogels and spherical microcarriers for tissue regeneration.