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Reinforcement of Calcium Phosphate-Calcium Sulfate Injectable Bone Substitute Using Citric Acid and Hydroxypropyl-Methyl-Cellulose

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In this study, we investigated a calcium phosphate-calcium sulfate injectable bone substitute (IBS) with organic reinforcement of chitosan, citric acid and hydroxypropyl-methyl-cellulose (HPMC). The powder component of IBS consisted of tetra calcium phosphate (TTCP), dicalcium phosphate dihydrate (DCPD) and calcium sulfate dihydrate (CSD). The liquid component was a solution of citric acid and chitosan. The effect of HPMC in terms of setting time, compressive strength and apatite forming ability on this IBS was investigated. The mass content of HPMC in liquid phase was varied in array of 0%, 2%, 3% and 4%. The setting times obtained between 20 and 45 minutes. Compressive strength was achieved over 20 MPa after incubation at 370C and in 100% humidity for 28 days. Porosities were evaluated in relation with compressive strength. Elastic moduli of the 28 days after-incubation IBS were obtained around 4GPa

Keywords: Bone Substitute; Calcium Phosphate Cement; Chitosan; HPMC; Citric Acid

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Mechanical properties, Biodegradability and Biocompatibility of Coronary Bypass Artery with PCL Layer and PLGA/Chitosan Mats Using Electrospinning

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A coronary graft fabricated from PLGA poly (lactic-co-glycolic acid) and chitosan electros puns deposited on poly caprolactone (PCL) electro spun tube. Mechanical properties of tube were evaluated through extruder machine depending on thickness of vessel wall. Biocompatible properties were evaluated by SEM morphology, amount of cell counting and MTT assay method for depending on culture days (1, 3, 5 days). MTT assay, counting cell and SEM morphology showed that cells were fast growth and immigration after 5 days. Biodegradability was monitored through loss weigh method for incubator days.

Keywords: PLGA, PCL, Chitosan, Electro spinning, Mechanical property, in vitro