120 minutes), Form 1 is 95.22%, Form 2 is 67.80%, Form 3 is 64.00% and Form 4 is 99.90%. : Form 4 > Form 1 > Form 2 > Form 3. The solubility of Form 1 placed on sale was lower than that of Form 4. Therefore, Form 4 of ceftriaxone sodium would be applied to enhance bioavailability. Each modification is also investigated after storage of 2 months at 52% and 0% humidity. All polymorphs except Form 2 of ceftriaxone sodium were not converted to another form at 52% and 0% humidity. However, Form 2 of ceftriaxone sodium was transformed to monohydrated form (Form 3 of ceftriaxone sodium) at 52% humidity. Form 2 of ceftriaxone sodium is regared as a metastable form.

[PE1-11] [2003-10-11 09:00 - 12:30 / Grand Ballroom Pre-function]

Collagen electrospun chitosan-PLLA membrane for guided bone regeneration

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Recently, the barrier membranes have been applied for regenerating bone surrounding peri-implant defects in guided bone regeneration(GBR). GBR membrane should provide mechanical support sufficient to withstand in vivo forces and maintain wound space for bone regeneration. The ability to exclude unwanted tissues or cells(connective tissue and epithelium) is needed. In addition large surface area is conductive to tissue ingrowth. The search for ideal materials that biocompatible, bioresorbable and can support the growth and phenotypic expression of osteoblasts is a major challenge in the biomedical application for the repair of bone defects. In our study, collagen electrospun chitosan-PLLA membranes for GBR were fabricated by electrostatic fiber spinning. Fibrous meshes of collagen electrospun chitosan-PLLA membranes were composed of collagen nano-fibers(50-800nm) and chitosan micro-fibers(30-50μm). Chitosan fibers support sufficient mechanical strength and collagen fibers provide large surface area. We assumed that nano/micro-fiber composites have advantages of both nano-fibrous membrane and micro-fibrous membrane. PLLA membranes between the two nano/micro-fiber composite meshes have 2-10μm pore size pores were generated by an in-air drying phase inversion technique. collagen electrospun chitosan-PLLA membranes showed similar tensile modulus with Chitosan-PLLA membrane. After 1 days osteoblast incubation, cells were spindle-shaped and had several cytoplasmic extension or lamellopodia development. After 1 week of culture, membrane surface is partially covered with multi-layers of cells. Therefore, it is demonstrated that collagen electrospun chitosan-PLLA membranes has good cellular compatibility. Also, it might be beneficial to achieve significant bone augmentation as GBR.

[PE1-12] [2003-10-11 09:00 - 12:30 / Grand Ballroom Pre-function]

Micro-and nanofibrous scaffold for enhanced cartilage regeneration

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Extracellular matrix(ECM) is composed of the ground materials(proteoglycan) and nano size diameter fibrous proteins(ex. collagens) that together form a composite-like structure. In this study, fibrous scaffold with biomimetic architecture based on collagen nanofibers interpenetrated in PLGA/chitosan microfibrous matrix. Chitosan was selected for its structure similarity to glycosaminoglycan and neutralizing capacity for PLGA acidic metabolite. Collagen nanofiber were prepared by electrospinning. Electrospinning fabricate ultra fibers ranging from 500-300 nm in a diameter, features a morphologic similarity to the ECM of natural tissue, which is characterized by a wide range of pore diameter distribution, high porosity, and effective mechanical properties. The strategy of this scaffold design includes; I) improvement of tissue compatibility of PLGA maintaining its mechanical strength and biodegradability, ii) enhancement of cell-matrix interaction provided by collagen nanofibers, iii) achievement of ideal biomimetic 3-D environment for chondrocyte culture and cartilage regeneration. Collagen nanofibers well incorporated into PLGA/chitosan microfibrous network. In micro-and