Treatment of skin with a permeation enhancer, oleic acid, decreased the resistance about 30 folds, and increased capacitance about 2 folds. In both the control and neat oleic acid treated skin, the resistance decreased as the temperature increased. The capacitance, on the other hand, increased as the temperature increased. We could not observe any phase transition type resistance and capacitance changes at around 8 ℃, due to the melting of oleic acid in the skin at this temperature. The results provide further mechanistic insight into ion conduction through the skin and into the role of stratum corneum lipids in skin capacitance.

[PE1-30] [04/21/2000 (Fri) 10:30 - 11:30 / [1st Fl, Bldg 3]]

DRUG LOADED POLY (ε-CAPROLACTONE)-CHITOSAN POROUS MATRICES AS BONE SUBSTITUTES

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With an aim of obtaining high efficacy in bone regeneration, drug releasing porous poly (ε-caprolactone)(PCL)-chitosan matrices were fabricated. These matrices were anticipated to perform structural tissue supporting activity and enhance tissue formation by releasing active agent in controlled manner. PCL-chitosan scaffolds were fabricated by freeze-drying PCL-chitosan solution mixture. Chitosan solution was added to enhance hydrophilicity of PCL and improve biocompatibility of the matrices. In addition, incorporation of tetracycline may be beneficial for obtaining improved efficacy especially in bone regeneration therapy. It was reported that tetracycline increased osseous regeneration when applied in local bone defect. Thus, if tetracycline can be loaded within these matrices and released in controlled rate, synergic effect by both scaffolding activity and tetracycline activity would be expected. This drug delivery system can maintain therapeutic concentration at the application site over therapeutic period. Fabrications of PCL-chitosan matrices, release kinetics of tetracycline, in vitro biodegradation test, and cell attachment test were investigated in this study. PCL-chitosan scaffold demonstrated porous structure and proper release profile to obtain effective drug concentration. Therefore, PCL-chitosan scaffold might be an effective device in obtaining tissue regeneration efficacy.

[PE1-31] [04/21/2000 (Fri) 10:30 - 11:30 / [1st Fl, Bldg 3]]

Biodegradable Injectable Particulate Systems for Controlled Drug Release using Poly (Lactic-co-glycolic) Acid Copolymers

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For the purpose of controlled local drug release, drug loaded injectable poly (lactic-co-glycolic) acid (PLGA) (75 : 25), (50 : 50) particulates were developed. The advantages of these particulate local drug delivery system include increase efficiency in localized drug release, extension in maintaining local concentration, which may induce optimum therapeutic efficacy. In this study, polymer solution was prepared by dissolving PLGA in methylene chloride. Subsquently, NSAIDs (piroxicam, flurbiprofen) were loaded into the PLGA solution, and mixed homogenously. The mixtures of polymer-drug-solvent were freeze dried, followed by being ground with micromill. Release profiles of PLGA particles and morphologies of the matrices and particulates were examined by scanning electron microscope (SEM) (JEOL, JSM 5200, JEOL Ltd., Tokyo, Japan). This method could minimize drug loss and maximize reproducibility of constant loading efficiency. Moreover mixed solvent system can permit generation of pores within the particles. These particulates had porous structures and proper release profiles to obtain effective drug concentration. Therefore, this particulate system might be an useful tool for effective local drug delivery system.