Symposium Ⅱ-1

Understanding of Tissue Regeneration by a Biomedical Engineer, Focusing on the In Situ Chitosan- and Hyaluronic Acid-Based Hydrogel

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Tissue engineering to restore damaged or lost tissues and organs has been recognized as an important technology in biomedical society. Scaffolds, cells and biological signals have been employed as key elements in tissue engineering. While polylactide, poly(lactide-co-glycolide), poly(ethylene oxide), polycarprolactone, poly(ethylene oxide)-co-polylactide and poly(methyl methacrylate) have been employed as synthetic biodegradable polymers, chitosan, hyaluronic acid and alginic acid have been employed as natural polymers for tissue engineering scaffolds. Numerous fabrications methods of new biodegradable scaffolds have been also developed such as hydrogels, films, and porous scaffolds for tissue regeneration. Recently intensive researches on both stem cells and bioactive molecules have been as well tried for tissue regeneration ofbones, cartilages, nerves and other tissues.

Reviews oftissue engineering will be focused on polymeric scaffolds mimicking extra-cellular matrix functions such as control of both cell adhesion and extra-cellular matrix degradation during tissue remodeling. Issuesof polymeric scaffold synthesis for tissue engineering will be discussed such as scaffold design and synthesis, and control of hydrogel synthesis kinetics in real laboratory world. I will also discuss in situ hydrogel synthesis, evaluation and its applications in both an in vitro bone cell interaction between cell and polymeric material surface as well as in vivo bone tissue regeneration, which has been performed in my laboratory with collaboration with other groups.

주요 학력 및 경력 :

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