

使用水產生醫材料之可分解骨釘在骨折內固定之結果-動物實驗

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**Using Bioresorbable Pin of Fish Scale for Internal Fixation of Fracture-  
Animal Study**

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**Purpose:**

The fish scales are considered as abundant aquatic wastes. Few applications were employed to develop on biomedical device with higher value. However, the main composition of fish scale is type I collagen which possesses outstanding biocompatibility and biodegradable properties. Thus, it has great potential on biomedical applications and deserved to be develop as medical device in order to satisfy the unmet clinically needs.

**Materials and Methods:**

Biomaterial pin comprised of fish scales fibrous collagen (type I) matrices were prepared and sterilized. 12 New Zealand White rabbits were prepared and a 4cm opening was created at the dorsal side of forearm. The radial bone was exposed and fracture was made. Then, internal fixation of the fracture was done by the biomaterial pin made by fish scale. After 12 weeks, the animals were sacrificed and the union of fracture was harvested for analysis.

**Results:**

All the rabbit healed uneventful and the fracture union. Histologically, osteogenesis process occurred in the manner of endochondral bone formation. Bone matrix was abundant and osteocytes were enclosed in lacunae. Abundant fibrovascular networks positioned around and interstitially between the rolled layered fish scale. The biomaterial fis scale pin was absorbed gradually.

**Conclusion:**

Few applications with fish waste were employed to develop on biomedical device, although they have outstanding biocompatibility and biodegradable properties. In this study, the bioabsorbable pin comprised of fish scales fibrous collagen (type I) matrices were prepared and the fracture surgery was done. The union of fracture was smoothly and the fish scale pin resorbed gradually. Therefore, fish scale collagen as medical device has great clinical potential in the future.