

# **Combination of compound scaffolds constructed by fibrin glue and xenogeneic inorganic bone and seed cells. [Chinese]**

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## **Abstract:**

Aim: To construct bone combined scaffolds in bone tissue engineering with fibrin glue and xenogeneic inorganic bone and perform three-dimensional culture of rabbit marrow stroma cells (MSCs) as well as probe into the adhesion effect of the scaffold on seed cells. Methods: The experiment was co-conducted by the Department of Orthopedics and Trauma of China-Japan Union Hospital and the Department of Mechanical Engineering, College of Mechanical Engineering of Jilin University and the Department of Genetics and Cell of Northeast Normal University between January 2005 and April 2006. The bovine cancellous bone (BCB) was dealt with  $H_2O_2$ , NaOH and alcohol to prepare inorganic bone. After that the BCB was combined with the fibrin glue to make combined scaffolds. Rabbit MSCs were cultured in vitro and transfer, and the MSCs were collected for three-dimension culture with fibrin glue and combined scaffold made of xenogeneic inorganic bone. The cell growth in fibrin glue was examined by HE staining, phase-contrast microscope and transmission electron microscope. Results: 1 Observation under the phase contrast microscope showed that the MSCs could be seen evenly mixed with the fibrin glue from inorganic bone gaps. 2 At the 4th week of culture, the MSCs formed into dense stereo-net. 3 It could be found under the transmission electron microscope that there were micro-protrusion in local stroma cells at one month after the culture, and mitochondria as well as ribosome were found in the cytoplasm with rough endoplasmic reticulum. Conclusion: The MSCs in scaffold combined by fibrin glue and xenogeneic inorganic bone are better in activity, and they can rapidly proliferate, which indicate that this kind of scaffold fits for the growth of seed cells.