



Fibroin protein/chitosan scaffolds and bone marrow mesenchymal stem cells culture *in vitro*

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ABSTRACT. A previous experiment demonstrated that fibroin protein and chitosan mixed in proper proportion presented good physical and chemical properties and biological characteristics, which can make up for their respective disadvantages. To observe the growth of bone marrow mesenchymal stem cells (BMSCs) on these fibroin protein/chitosan 3D scaffolds, induced rabbit BMSCs were seeded on fibroin protein/chitosan scaffolds. The cell adhesion rate was measured, and cell growth was observed under an inverted microscope and a scanning electron microscope. The cell adhesion rate increased with time. The inverted microscope observations showed that the cells on fibroin protein/chitosan scaffolds could not be seen clearly. As time passed, the number of cells around the stent increased and some cells stretched inside the scaffolds. Electron microscopy showed active cell growth and normal proliferation, and the granular and filamentous matrix substances could be seen around cells. The microfilaments of cell and scaffold materials were tightly connected. The cells not

only grew on the surface of the adherent material, but also stretched inside of the materials. These results indicated that the fibroin protein/chitosan mixed scaffolds have good biocompatibility.

Key words: Fibroin protein; Chitosan; Scaffold; Biomaterials; Tissue engineering; Bone marrow mesenchymal stem cells