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Cell culture *in vivo* by means of diffusion chamber system

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Abstract:
In a diffusion chamber (DC) system, cells are cultured *in vivo* — hence making it possible to minimize infection and foreign material contamination. In view of this merit, we devised a technique to combine a DC system and a scaffold to the end of incubating sufficient host cells for grafting. In the present study, PLGA sponge and rat bone marrow cells were encapsulated inside a DC and then placed inside the abdominal cavities of rats. DCs were removed at two or four weeks after grafting. At four weeks after grafting, fibrous and calcified tissue matching the shape of the PLGA sponge was formed. These results suggested that the PLGA sponge was an effective scaffolding material in inducing three-dimensional tissue formation and that combination with a DC system resulted in a cell mass matching the scaffold shape. In addition, the cells were cultured *in vivo* — which meant that DC culturing did not require special incubation facilities or technologies after grafting.

Key words:
PLGA, Bone marrow cell, Diffusion chamber

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