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Hepatocyte spheroids formed on rubbed polyimide membrane for cell transplantation

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ABSTRACT

In this study, we have prepared a rubbed fluorinated polyimide membrane using a rubbing machine with a rubbing cloth and formed hepatocyte spheroids on the rubbed membrane. The re-seeding of the spheroids, that is, spheroid building, enhanced the biochemical functions of the spheroids by optimization of the culture conditions. Furthermore, the co-culture of the spheroids with endothelial cells enhanced the spheroid function. To increase the specific function without co-culture, we attempted to transplant the hepatocyte spheroid into rat spleen. The transplanted spheroid without dispersion was observed by hematoxylin-eosin staining. Moreover, immunostaining proved that the resulting spheroids in the spleen expressed liver-specific antigen on cell surface. These results suggest that the hepatic spheroid formed on the rubbed polyimide membrane succeeded to be transplanted.

Keywords: Polyimide membrane; Rubbing; Hepatocyte spheroid; Cell transplantation; Endothelial cell

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