www.elsevier.com/locate/yexcr

Assessment of the hepatocytic differentiation ability of human skin-derived ABCB5^{+} stem cells

Lysann Tietze, Sandra Winkler, Madlen Hempel, Mark Andreas Kluth, Nils Tappenbeck, Christoph Ganss, Steven Dooley, Bruno Christ

PII: S0014-4827(18)30322-7
DOI: https://doi.org/10.1016/j.yexcr.2018.05.040
Reference: YEXCR11064

To appear in: *Experimental Cell Research*

Received date: 10 March 2018
Revised date: 30 May 2018
Accepted date: 31 May 2018

Cite this article as: Lysann Tietze, Sandra Winkler, Madlen Hempel, Mark Andreas Kluth, Nils Tappenbeck, Christoph Ganss, Steven Dooley and Bruno Christ, Assessment of the hepatocytic differentiation ability of human skin-derived ABCB5^{+} stem cells, *Experimental Cell Research,* https://doi.org/10.1016/j.yexcr.2018.05.040

Assessment of the hepatocytic differentiation ability of human skin-derived ABCB5$^+$ stem cells

Lysann Tietze[1], Sandra Winkler[1], Madlen Hempel[1], Mark Andreas Kluth[2,3], Nils Tappenbeck[2], Christoph Ganss[2,3], Steven Dooley[4], Bruno Christ[1]*

[1]Department of Visceral, Transplantation, Thoracic and Vascular Surgery, Applied Molecular Hepatology, University of Leipzig, Liebigstraße 21, 04103 Leipzig, Germany

[2]RHEACELL GmbH & Co. KG, Im Neuenheimer Feld 517, 069120 Heidelberg, Germany

[3]TICEBA GmbH, Im Neuenheimer Feld 517, 069120 Heidelberg, Germany

[4]Department of Medicine II, Molecular Hepatology Section, Medical Faculty Mannheim, University of Heidelberg, Mannheim, Germany

*Corresponding author: Prof. Dr. Bruno Christ, Department of Visceral, Transplantation, Thoracic and Vascular Surgery, University of Leipzig, Liebigstraße 21, D-04103 Leipzig, Germany; Phone: +49 (0)341 97 13555; Fax: +49 (0)341 97 13559; E-mail: bruno.christ@medizin.uni-leipzig.de

Abstract

The continuously decreasing willingness for liver donation aggravates treatment of end-stage liver diseases requiring organ transplantation as the only curative strategy. Cell therapy approaches using human hepatocytes or stem cell-derived hepatocyte-like cells may be a therapeutic option out of this dilemma. ABCB5-positive mesenchymal stromal cells from human skin featured promising potential to treat immune-mediated diseases. Since most of chronic liver diseases involve exaggerating immune mechanisms, it was the aim to demonstrate in this study, whether ABCB5$^+$ stem cells may serve as a resource to generate hepatocytic cells for application in liver cell transplantation. Using an established single-step protocol, which had been successfully applied to differentiate mesenchymal stromal cells into the hepatocytic lineage, ABCB5$^+$ skin-derived stem cells did not gain significant characteristics of hepatocytes. Yet, upon culture in hepatocytic differentiation medium, ABCB5$^+$ stem cells secreted immunomodulatory and anti-fibrotic factors as well as proteins, which may prompt hepatic morphogenesis besides others. Hepatic transplantation of ABCB5$^+$ stem cells, which had been prior cultured in hepatocytic differentiation medium, did not cause any obvious deterioration of liver architecture suggesting their safe application.