Title:	Comparison of fetal bovine serum and human platelet lysate in cultivation and differentiation of dental pulp stem cells into hepatic lineage cells
Type:	Article
Source (ISSN):	BIOCHEMICAL ENGINEERING JOURNAL (1369-703X)
Status:	A paid open access option is available for this journal.
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Volume (Issue):	88: 142-153
DOI:	10.1016/j.bej.2014.04.007
Abstract:	The scarcity of organs for liver transplant is a major pressure point of liver transplantation. Hence, generating hepatocytes may provide an alternative choice for therapeutic applications. At present, dental pulp stem cell (SCDs) is an emerging source in regenerative medicine. However, existing protocols for cell culture requires fetal bovine serum (FBS) as a nutritional supplement and may carry the risk of transmitting diseases. Therefore, the present study was undertaken to examine the efficacy of human platelet lysate (HPL) as a substitute for FBS in terms of proliferation and differentiation of SCDs into hepatic lineage cells. The result showed that HPL had displayed a superior effect on the proliferation of SCDs. Next, we induced SCDs into hepatic lineage cells which thrived by initiation and followed by maturation into functional hepatocytes for a total of 21 days. We observed that the gene, protein and its functional profile during this differentiation process reiterated in vivo liver development demonstrating a steady down-regulation of early endoderm markers (GATA4, GATA6, SOX17,

	HNF4 alpha, HNF3 beta and AFP) with the up-regulation of hepatic specific markers (TDO, TO, TAT, ALB, AAT, CK18). We also noticed the presence of CK19 suggesting a progenitor population. To ascertain this, we checked for the expression of pluripotent markers and observed that it remained unchanged throughout the experiment period. Our results provide new insights on the ability of SCDs to differentiate into hepatic lineage cells and most remarkably, this can be done in autologous settings whereby both cell source and HPL can be derived from the same donor thus reducing the risk of disease transmission.
Keyword:	endoderm; progenitors; autologous; allogeneic; cell transplantation; liver failure; hepatocyte transplantation; in-vitro; liver; tissue; pluripotency; expression; expansion; culture
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