

## P-2 In vitro Differentiation of Human Umbilical Cord-derived Stem Cells and Human Amnion-derived Stem Cells into Hepatocyte-like Cells

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**Objectives:** Many types of liver diseases can damage regenerative potential of mature hepatocytes, hepatic progenitor cells or oval cells. In such cases, a stem cell-based therapy can be an alternative therapeutic option, a stem cell-based therapy can be an alternative therapeutic option. Hematopoietic stem cells or bone-marrow-derived mesenchymal stem cells have been examined for the potential. However, these cells are not easily obtained or applied. In this study, we examined that human amnion-derived mesenchymal stem cells (HAM) and human umbilical cord-derived stem cells (HUC) could be differentiate into hepatocyte-like cells as new sources of human adult stem cells.

**Methods:** HAM and HUC were isolated from the amnion and umbilical cord of the volunteers with informed consent after a Caesarean section. In order to differentiate the cells into hepatocyte-like cells, the cells were cultivated in hepatogenic medium using culture plates coated with fibronectin. Effects of hepatocyte growth factor, L-ascorbic acid 2-phosphate, insulin premix (ITS), fibroblast growth factor-4, dimethylsulfoxide, oncostatin M and/or dexamethasone were examined on the hepatic differentiation. After culture for 3 weeks, the cells were analyzed by RT-PCR, immunocytochemistry, western blotting, human albumin ELISA, urea assay and periodic acid Schiff (PAS) staining.

**Results:** Initial fibroblast-like appearance of HAM and HUC was changed to round shape during culture in the hepatogenic medium. However, in all hepatogenic conditions, HUC secreted more amounts of albumin into medium than HAM. Urea assay also showed that HUC synthesized more amounts of urea than HAM. Expression of hepatocyte-specific genes was increased or newly synthesized by HUC cultivated in hepatogenic medium. Results of immunocytochemistry and western blotting confirmed that HUC produced albumin. PAS staining also showed that HUC could store glycogen inside of cells.

**Conclusion:** In conclusion, human adult stem cells were successfully isolated from amnion and umbilical cord. HUC could be better differentiated into hepatocyte-like cells than HAM in our hepatogenic conditions. So, HUC and HAM were could be used as new sources of stem cells for the cell-based therapeutics such as in liver diseases.

## P-3 Differentiation of Human Amniotic Membrane-derived Stem Cells after Cryopreservation into Insulin-producing Cells

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**Objectives:** Beta-cell replacement is a promising approach for treatment of type 1 diabetes. However, the limited supply of suitable donors for pancreatic islets and autoimmune attack of transplanted islets are limitations of this approach. Human amniotic membrane-derived stem cells (HAM) could be a potential source of insulin-producing cells. But, the long-term cultivation of HAM may fail due to many factors. Therefore, it is necessary to cryopreservation of the cells for clinical use.