



Primary Human Liver cells Manual

BeCytes Biotechnologies



HUMAN HEPATIC STELLATE CELLS



Ref: HuSC

Categories:

- SC-P1: SC passage 1
- SC-P2: SC passage 2
- SC-P3: SC passage 3

HEPATIC STELLATE CELLS (HSC)

Hepatic stellate cells (HSC) are pericytes located in the space of Disse. These cells are the major cell type involved in liver fibrosis in response to liver injury. HSC play a key role in liver homeostasis, as well as the maintenance and regeneration.

Likewise, in their quiescent state, HSC contain numerous vitamin A lipid droplets, constituting the largest reservoir of vitamin A in the body. Besides, HSC has the capability to change into their activated stage transdifferentiating into myofibroblast-like cells which are linked with the pathogenesis of hepatic fibrosis.

Moreover, activated stellate cells can proliferate, contract, and regulate chemotaxis becoming the main source of extracellular matrix production during liver injury. This leads to the secretion of collagen which provides a scaffold for hepatocytes to repopulate during tissue regeneration and can lead to cirrhosis.

SC are produced under rigorous QC standards and supplied with:

- Demographic and clinical donor profile
- Viability and morphology assessment
- Specific COA with culture and maintenance protocols
- Specific stellate cells media

Shipping conditions: Dry ice (-80°C)/ LN₂ (-196°C)

CHARACTERIZATION

BASIC CHARACTERIZATION

- Cell number and viability after thawing
- Morphological analysis of cells over time

ADVANCED CHARACTERIZATION

- immunofluorescence phenotypic characterization using vimentin, cygb and α -sma markers.

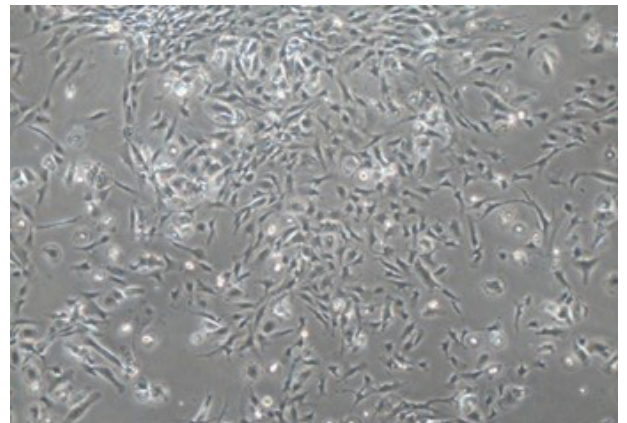
COMMON USES

Cell Based Assays

- Toxicity
- Drug screening
- Metabolism

Useful tool to study

- Liver function
- Physiology
- Liver diseases (Fibrotic Models)



Stellate cells at passage 1: Morphology 5 days after the seeding.

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certificate of analysis (CoA)

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LIVER ENDOTHELIAL & ENDOTHELIAL SINUSODIAL CELLS



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Ref: HuLEC/HuLSEC

ENDOTHELIAL & SINUSODIAL CELLS (HuLEC/HuLSEC)

Liver Endothelial cells (LEC) and Liver Endothelial sinusoidal cells (LSEC) represent the primary permeable barrier in blood vessels making them highly dynamic cells that regulate the passage of substances between the bloodstream and liver tissue.

Endothelial cells also contribute to the immune response within the liver. They express adhesion molecules and receptors that facilitate the recruitment and interaction of immune cells, such as Kupffer cells and lymphocytes, during infection or inflammation. Moreover, liver endothelial cells participate in the metabolism and detoxification of drugs and xenobiotics by expressing various drug-metabolizing enzymes.

They play vital roles in regulating blood flow, nutrient exchange, immune responses, and fibrosis. Further research into the biology and functions of these cells is crucial for advancing our knowledge of liver physiology and developing targeted therapies for liver diseases.

LEC are produced under rigorous QC standards and supplied with:

- Demographic and clinical donor profile
- Viability and morphology assessment
- Specific COA with culture and maintenance protocols
- Specific LEC/LSEC media

Shipping conditions: Dry ice (-80°C)/ LN₂ (-196°C)

Categories:

- HuLEC/LSEC-P1: LEC – LSEC passage 1
- HuLEC/LSEC-P2: LEC – LSEC passage 2
- HuLEC/LSEC-P3: LEC – LSEC passage 3

CHARACTERIZATION

BASIC CHARACTERIZATION

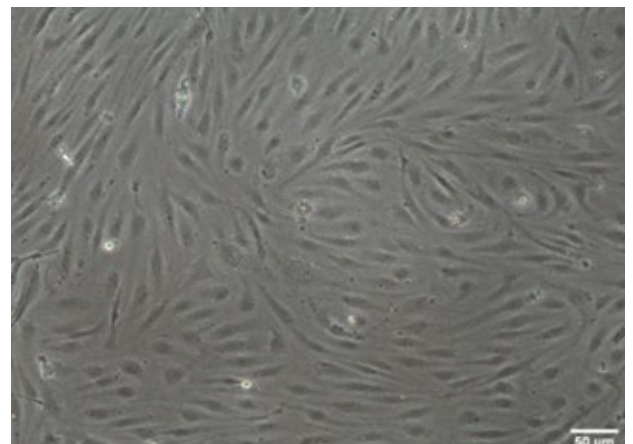
- Cell number and viability after thawing
- Morphological analysis of cells over time

ADVANCED CHARACTERIZATION

- Immunofluorescence using CD31, Lyve-1, ve-cad and von Willebrand Factor markers

COMMON USES

- *In vitro* toxicity testing
- Clearance of pathogens and macromolecules
- Liver Regeneration



Liver endothelial cells at passage 1: Morphology 5 days after the seeding

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HUMAN KUPFFER CELLS



Ref: HuKC

Categories:

- HuKC: Kupffer cells

KUPFFER CELLS (HuKC)

Kupffer cells (KC) are specialized macrophage residents in the liver, lining the walls of the sinusoids. Kupffer cells are part of the immune system and can be activated to produce inflammatory cytokines, growth factors, and reactive oxygen species.

Furthermore, KC are part of the first line of defense against bacteria and toxins from the gut and perform an efficient uptake of senescent red blood cells in the blood vessel for the transfer of iron to hepatocytes. In addition, powerful lysosomal enzymes are found in KC and as a result, many substances that are ingested and partially degraded by them are passed on to hepatocytes, thus performing key functions in the liver.

However, their prolonged activation is associated with many liver diseases including Non-alcoholic Fatty Liver Disease (NAFLD), Non-alcoholic Steato Hepatitis (NASH), and liver damage related to the transcription of pro-inflammatory cytokines. KC also produce superoxides that might enter the stellate cells, leading to fibrosis development by

KC are produced under rigorous QC standards and supplied with:

- Demographic and clinical donor profile
- Viability and morphology assessment
- Specific COA with culture and maintenance protocols
- Kupffer cells media

Shipping conditions: Dry ice (-80°C)/ LN₂ (-196°C)

CHARACTERIZATION

BASIC CHARACTERIZATION

- Cell number and viability after thawing
- Morphological analysis of cells over time

ADVANCED CHARACTERIZATION

- Phenotypic characterization by flow cytometry using CD45, CD11b, and CD14 markers
- LPS induction assays

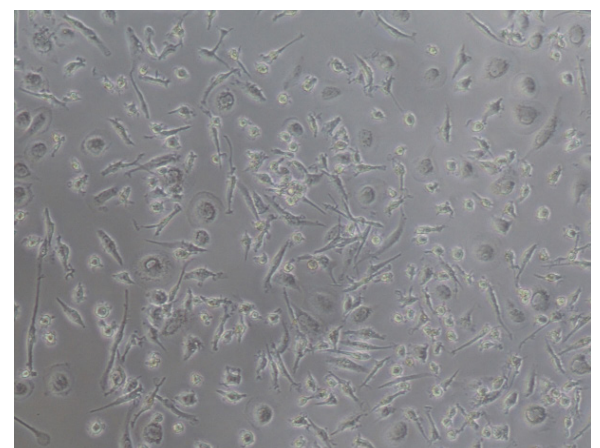
COMMON USES

Useful tool to study

- Disease progression
- Pro-inflammatory Metabolism
- Anti-inflammatory balance

In vitro co-cultures with KC can also be used for:

- Toxicity tests
- Drug screening



Kupffer cell morphology 6 days after seeding

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HUMAN NON PARENCHYMAL CELLS



Ref: HuNPC

Categories:

- HuNPC: Mix NPCs
- HuNPC+: Mix NPCs with additional info

NON PARENCHYMAL CELLS MIX (NPCs)

Hepatic non-parenchymal cells (NPCs) represent about 30% of the liver, and are specialized cells which interact with hepatocytes. NPCs present organotypic hepatocyte-NPC interactions via direct contact or paracrine signaling, and forming a functional hepatic unit.

Among their many functions, NPCs play an important role for liver regeneration as well as recovery from inflammatory liver injury and scarring.

Advanced liver models, including those with in vivo-like environments and liver co-cultures, are essential for accurate predictive responses in studying liver physiology/pathology and conducting drug screenings, offering increased sensitivity and the ability to manipulate various conditions and analyze multiple parameters.

“Mix NPCs” provide a mixture of different types of liver cells, including native cell ratios of:

- Kupffer cells
- Liver Endothelial cells

NPCs are produced under rigorous QC Standards and supplied with:

- Demographic and clinical donor profile
- Viability and morphology assessment
- Specific COA with culture and maintenance protocols
- Specific NPCs thawing media

Shipping conditions: Dry ice (-80°C)/ LN₂ (-196°C)

CHARACTERIZATION

BASIC CHARACTERIZATION

- Cell number and viability after thawing

ADVANCED CHARACTERIZATION

- Determination of the expression of NPC markers by flow cytometry:
 - HSC: Vimentin, α SMA
 - KC: CD14, CD68
 - LEC: CD31, VE-cad
 - LSEC: Lyve1, CLEC4G
 - Cholangiocytes: EpCAM

COMMON USES

- Inflammation and immune response studies
- Fibrosis and cirrhosis research
- Drug metabolism and toxicity screening
- Liver regeneration studies
- Viral infection models
- Metabolic and lipid research
- Cell signaling and gene expression studies

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FRESH PRIMARY HUMAN HEPATOCYTES



Ref: HuHEF

Categories:

- HuHEFS: Suspension (Minim order 10M)
- HuHEFPN: Plated - No Overlay
- HuHEFPO: Plated - Overlay

FRESH PRIMARY HUMAN HEPATOCYTES (HuHEF)

Fresh Primary Human Hepatocytes (HuHEF), derived from liver tissue unsuitable for transplantation, are primary liver cells with high relevance for *in vitro* studies.

These hepatocytes retain essential characteristics of liver cells found in the human body, such as metabolic activities, drug-metabolizing enzymes, and transporters.

After isolation, HuHEF can be received either in suspension or as plated cells, together with the corresponding morphological information

HuHEF serve as valuable tools for investigating liver biology, drug metabolism, and transport, offering insights into human-specific responses and facilitating the advancement of liver-related research.

HuHEF are produced under rigorous QC Standards and supplied with:

- Demographic and clinical donor profile
- Specific COA with culture and maintenance protocols
- Specific hepatocytes media

BASIC CHARACTERIZATION

Plateable

- Number of cells per well
- Confluence
- Viability before plating

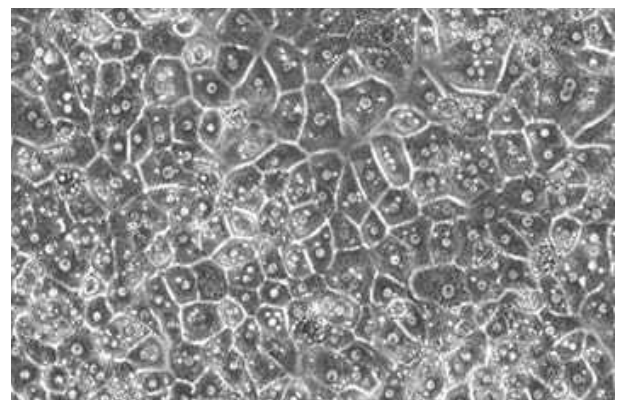
Suspension

- Number of cells shipped
- Viability before plating

COMMON USES

- Metabolism analysis
- Toxicity assessments
- Enzyme activity studies
- Prediction of metabolic clearance
- Drug-drug interaction assays
- Hepatotoxicity
- Among Others

Shipping of plated cells can be on the plate of your choice



Primary fresh human hepatocytes

Shipping conditions: 4°C

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CRYOPRESERVED PRIMARY HUMAN HEPATOCYTES



Ref: HuHEC

CRYOPRESERVED PRIMARY HUMAN HEPATOCYTES (HuHEC)

HuHEC are human liver cells that have been isolated from healthy and pathological donor livers and preserved by cryopreservation techniques for later use in research allowing researchers to organize experiments at their convenience.

HuHEC retain important characteristics of liver cells found in the human body, and they serve as valuable tools for a wide range of research applications.

These hepatocytes are stored at very low temperatures, typically in liquid nitrogen, to maintain their viability and functionality for an extended period. When needed for research, cryopreserved hepatocytes can be thawed and cultured to restore their full functionality.

The use of Cryopreserved Primary Human Hepatocytes offers several advantages, including convenience, scalability, and the ability to access a consistent and quality-controlled cell supply.

HuHEC are produced under rigorous QC Standards and supplied with:

- Demographic and clinical donor profile
- Hepatocyte characterization
- Specific COA with culture and maintenance protocols
- Specific hepatocytes media

Shipping conditions: Dry ice (-80°C)/ LN₂ (-196°C)

Categories:

- HeHuCSM: Suspension - Metabolism Certified
- HeHuCSM-3D: Suspension - Metabolism Certified 3D
- HeHuCPMI: Plateable - Metabolism & Induction Certified
- HuHECPMI-3D: Plateable - Metabolism, Induction certified & 3D Qualified

CHARACTERIZATION

BASIC CHARACTERIZATION

- Cell number and viability after thawing
- Optimal seeding density (24 and 96-well plate)
- Adhesion capacity
- Morphology of the cells in culture
- Ability to generate spheroids
- Number of days the cells are in culture

ADVANCED CHARACTERIZATION

- Induction assays testing the ability of cytochromes CYP1A2, CYP2B6 and CYP3A4 to overexpress.
- Metabolisation assays in which the resulting metabolites shall be detected and quantified.
- WGS genotyping from our lots included.

COMMON USES

- Metabolism analysis
- Toxicity assessments
- Enzyme activity studies
- Prediction of metabolic clearance
- Drug-drug interaction assays
- Hepatotoxicity
- Among Others



Primary cryopreserved human hepatocytes vials

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