

PRODUCT DATA SHEET

Primary Human Stellate Cells (PHSC)

SKU: TDC-P1101

Product Details

Catalog Number: TDC-P1101

Organism: *Homo Sapiens*, Human

Cell Type: Hepatic Cell

Tissue: Liver

Clinical Information: Healthy (with no known disease phenotypes)

Package Size: 1 x 10⁶ cells/vial

Passage Number: P1

Growth Properties: Adherent

Associated Media: Stellate Cell Culture Kit (TDM-1011K)

Storage Conditions & Shipment

Product Format/Shipped: Cryopreserved / Dry ice

Storage: Liquid Nitrogen

Safety Precaution

PLEASE READ BEFORE HANDLING ANY FROZEN VIALS. *Please wear appropriate Personal Protection Equipment (lab coat, thermal gloves, safety goggles and a face shield) when handling*

Description

Primary Human stellate cells (PHSCs) are specialized cells found in the liver that play a key role in liver function and pathology. They are involved in the storage of vitamin A and the regulation of extracellular matrix (ECM) components. In a healthy liver, stellate cells exist in a quiescent state, but they can become activated in response to liver injury, such as in conditions like fibrosis or cirrhosis. Upon activation, HSCs transform into myofibroblast-like cells, producing collagen and other ECM proteins, which contribute to scar tissue formation and liver fibrosis.

Primary HSC are isolated from human liver tissue and are widely used in research to study liver fibrosis, wound healing, and the cellular mechanisms involved in liver diseases. These cells are valuable in drug discovery, as they provide insights into the pathophysiology of liver diseases and can be used to test compounds aimed at preventing or reversing liver fibrosis. Additionally, HSCs are crucial in understanding liver regeneration and the role of cell-cell interactions in maintaining liver homeostasis.

Product Data

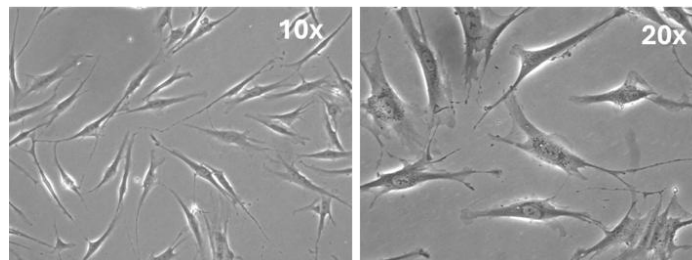


Figure 1: Phase images shows the characteristic morphology of primary human stellate cells (PHSC) from healthy donor. They exhibit a star-like, dendritic shape with long, branched extensions. Upon activation, HSCs undergo morphological changes, becoming more spindle-shaped and exhibiting a more fibroblast-like appearance with reduced branching.

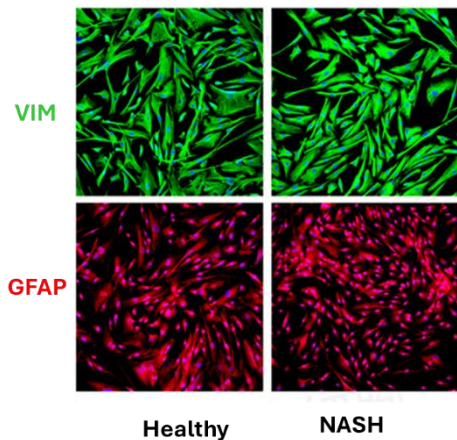


Figure 2: Primary human stellate cells from healthy (left) and NASH patient were stained with Vimentin (VIM, green) and Glial Fibrillary Acidic Protein (GFAP, red) antibodies. GFAP staining in NASH line shows more activated stellate cells, marking the presence of intermediate filaments involved in cell activation.

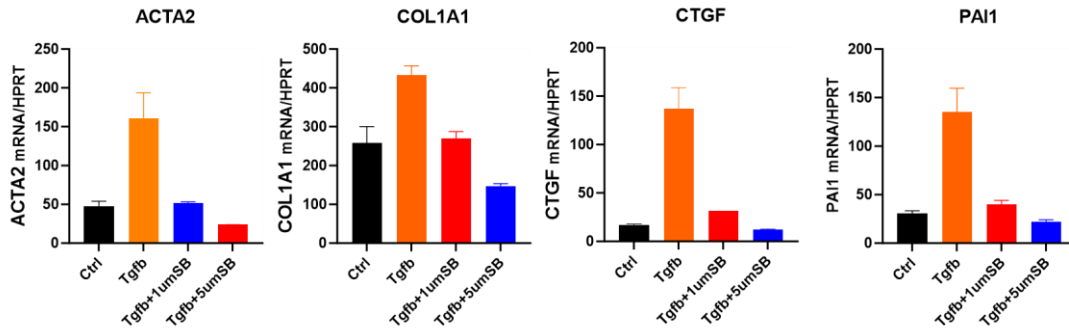


Figure 3, Primary Human stellate cell (PHSC) stimulation: PHSCs were treated with TGF- β or SB431542 for 24 hours, and relative expression of ACTA2 (α -SMA), COL1A1 (collagen I), CTGF (connective tissue growth factor), and PAI1 (plasminogen activator inhibitor-1) was measured. TGF- β stimulation significantly upregulates the expression of all four genes, indicating activation of a fibrotic response. SB431542 treatment significantly reduces the expression of these genes, confirming its inhibitory effect on TGF- β signaling.

Applications

1. Disease models such as liver fibrosis and liver injury & repair
2. Drug Discovery and Screening
3. Hepatic Stellate Cell Activation and Signaling
4. Liver Regeneration and Repair

Protocols

1. Recovering PHSC

- 1) Take the cryovial containing the frozen cells out of liquid nitrogen storage; quickly thaw the cells in a 37°C water bath by gently swirling the vial.
- 2) When there still be a small amount of ice left in the vial, take out the vial from the water bath, slowly add 1ml of prewarm complete culture medium.
- 3) Transfer the cells to a 15ml falcon tube containing 8ml complete culture medium. Revert the tube 5-7 times (do not vortex or shake) before spinning at 4C for 100g for 10min without breaking.

- 4) Discard the supernatant and resuspend the cells in 2ml complete medium and count the cells by adding (20ul cell suspension, 40ul complete medium and 20ul trypan blue (1:4 dilution))

2. Culturing PHSC

- 1) Plate the cells in 10cm dish (300-500K/dish) and put it in a 37°C, 5% CO₂ incubator.
- 2) Change the medium overnight
- 3) Change the medium 2-3 times a week

Disclaimers

This product is intended for laboratory research use only. It is not intended for any animal or human therapeutic use, any human or animal consumption, or any diagnostic use.