Primary human hepatocyte qualification

PHH-2024164

Supplier: LifeNet health

Test date: June 2022

Experiment: CLT22005 + CLT22006

Overview

This report describes the validation of primary human hepatocytes (PHHs) by CN Bio for liver-on-a-chip assays.

Our quality control procedures ensure that donor cells form healthy, metabolically active three-dimensional microtissues that maintain a hepatic phenotype when cultured over 14 days by PhysioMimix OOC Systems.

Protocol

$4x10^5$ PHH cells per well were seeded on day 0 into a PhysioMimix Multi-chip Liver-12 plate using LifeNet Health LifeSciences Hepatocyte Thawing Medium.

To assess cell health and functionality throughout the experiment, LDH, albumin and urea were measured at each media change, or at the experiment's conclusion, on days 4, 6, 8, 11 and 14. The metabolic activity of PHH microtissues was quantified by measuring CYP3A4 activity on days 4, 8 and 14 (Fig 1).

On day 14, scaffolds within each well of the Multi-chip Liver-12 plate were removed and the microtissues within the scaffold's pores were fixed and imaged using a brightfield microscope (10x magnification) to assess the quality of tissue formation (Fig 2). The qualification followed our 001152_Rev01 PHH Validation Protocol.

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Validation Data

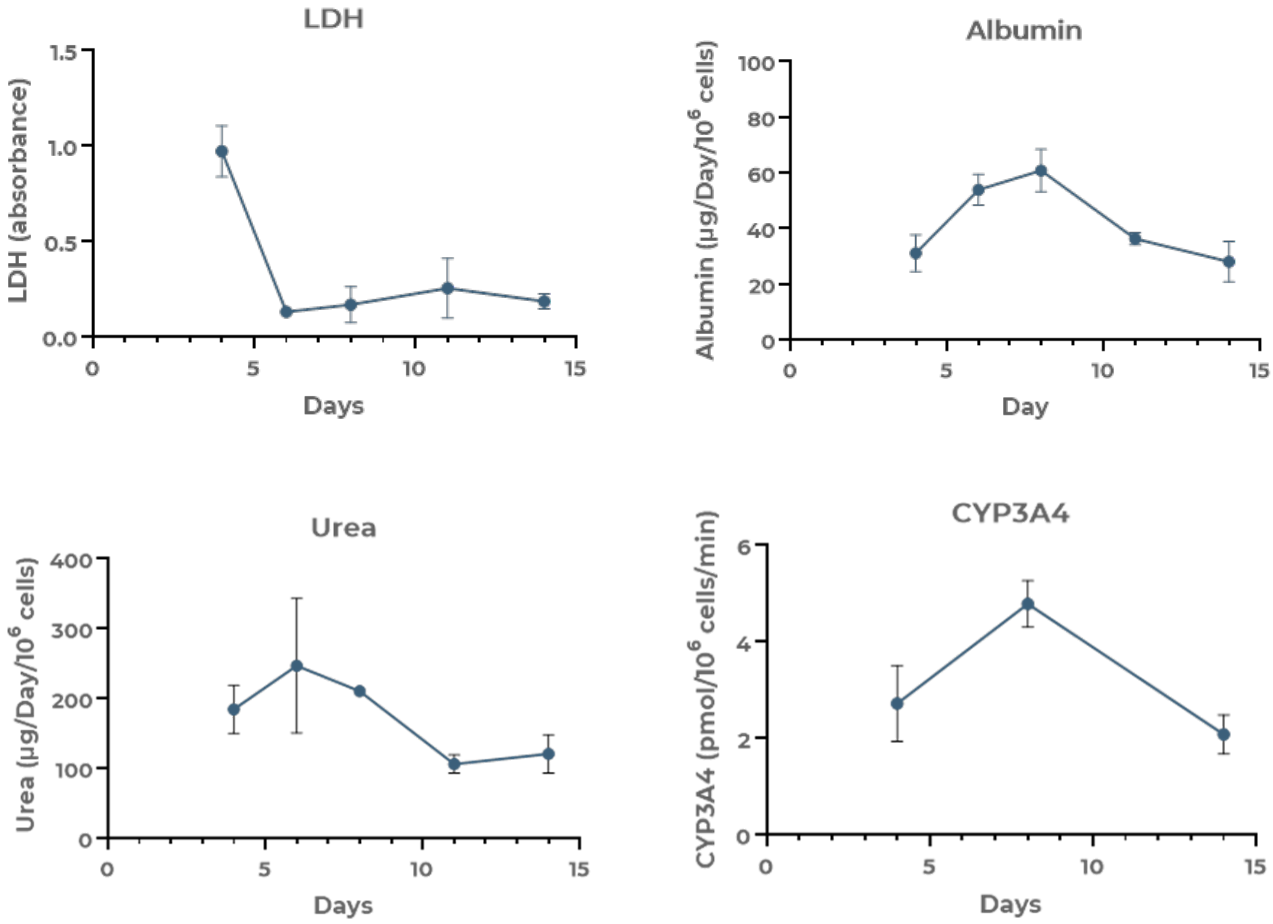

Figure 1 – Cell heath and function analysis. *Quantification of LDH (colorimetric assay), albumin and urea (ELISA) within media samples taken at days 4, 6, 8, 11, and 14 of culture.*

Microtissue formation

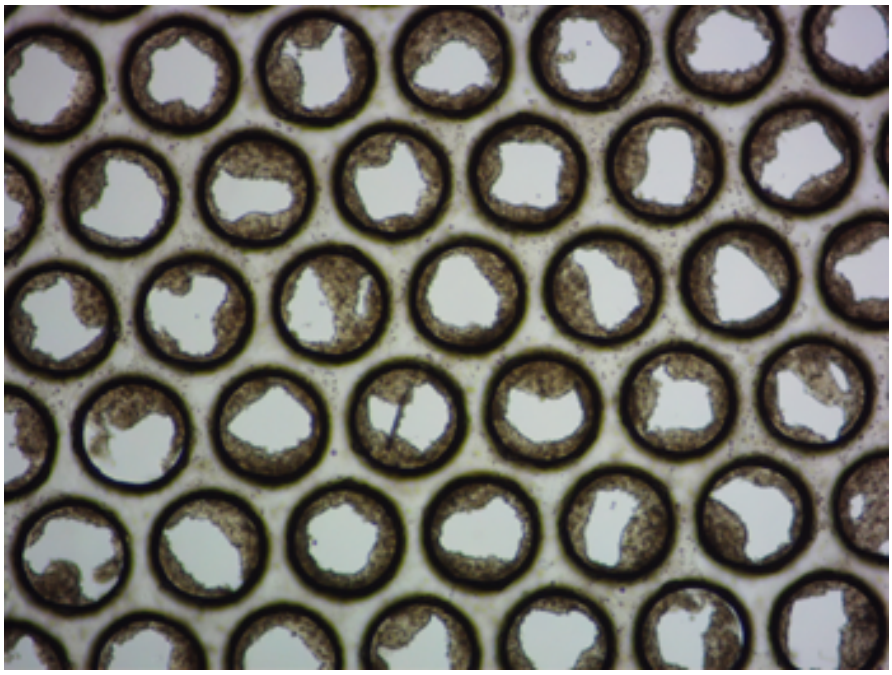

Figure 2 – Brightfield Microscopy. *Representative image taken at 10X from one scaffold removed from the Liver-12 plate at day 14.*