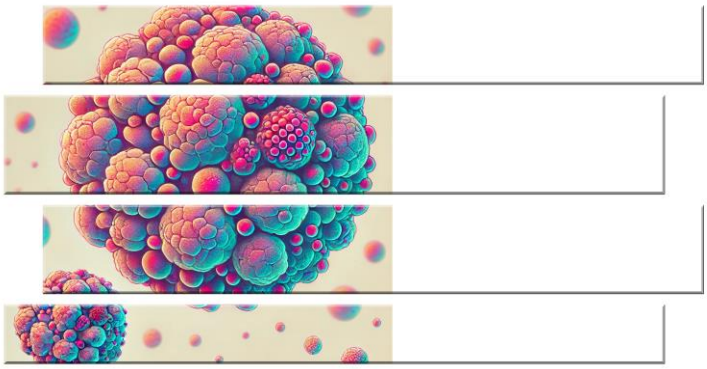

TriDix Bio
INNOVATING DRUG DISCOVERY

PRODUCT DATA SHEET

Primary Human Hepatic Spheroid

SKU: TDC-T1101

Product Details

Catalog Number: TDC-T1101

Organism: *Homo Sapiens*, Human

Cell Type: Hepatic Spheroid

Tissue: Liver

Clinical Information: Healthy (with no known disease phenotypes)

Package Size: 96-well plate

Passage Number: none

Growth Properties: 3D spheroid

Associated Media: Hepatocyte Culture Base Medium (Cat# TDM-1012)

Storage Conditions & Shipment

Product Format/Shipped: 96-well plate/ambient

Storage: 37C 5% CO2

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

Hepatic spheroids are three-dimensional (3D) cell culture models made up of liver cells, often derived from hepatocytes, hepatic stellate cells and liver NPC. These spheroids mimic the in vivo architecture and functionality of the liver more closely than traditional 2D cell cultures, offering a more accurate representation of cellular interactions, metabolic activity, and tissue organization.

Hepatic spheroids are commonly used in research to study liver biology, drug metabolism, liver diseases, toxicity testing, and regenerative medicine. They provide valuable insights into hepatocyte behavior, cellular differentiation, and liver-specific functions like albumin secretion, urea synthesis, and detoxification processes. Additionally, hepatic spheroids are increasingly employed in personalized medicine and preclinical drug testing, providing a more reliable platform for evaluating the safety and efficacy of pharmaceutical compounds.

Product Data

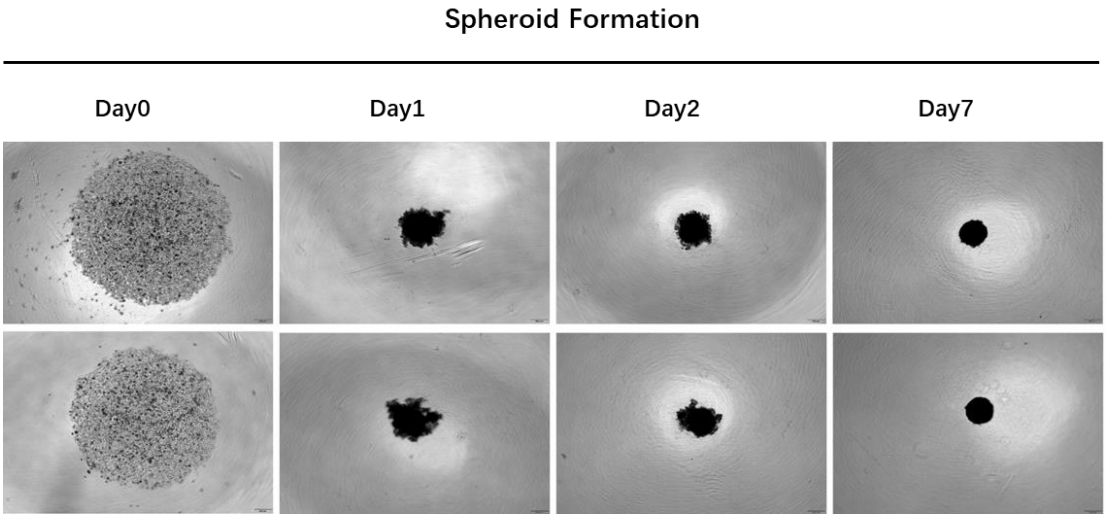

Figure 1, Hepatic spheroid formation in a 96-well plate: Primary human hepatocytes (PHH), human stellate cells (HSC), and liver non-parenchymal cells (NPC) were mixed in a specific ratio and plated into 96-well U-shaped plates. After a few days of culture, round and uniformly sized spheroids were formed. Images were captured following plating as indicated.

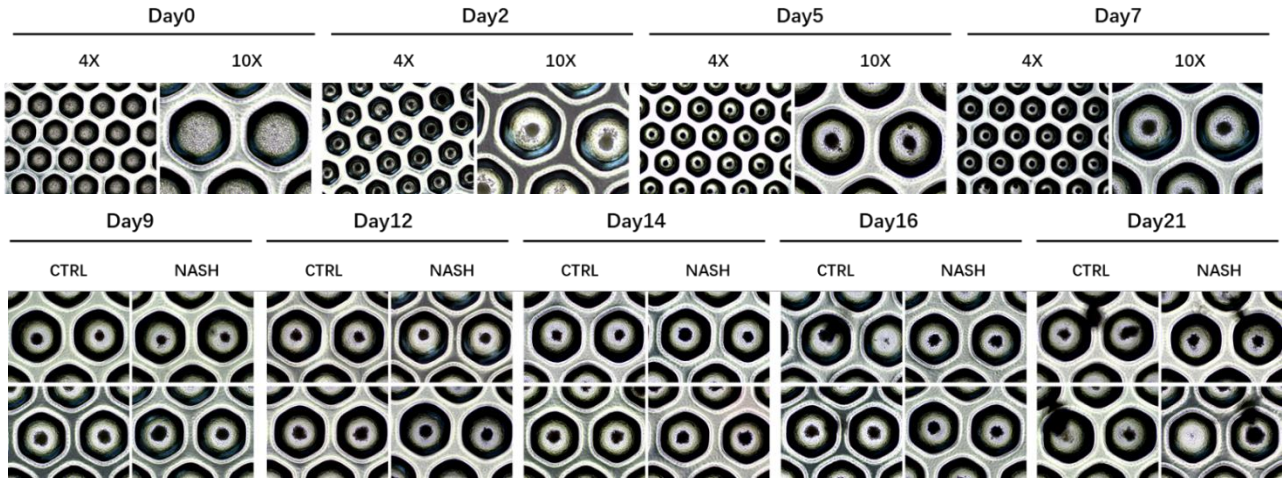

Figure 2, Hepatic spheroid formation in a Honeycomb plate:PHH), HSC, and liver non-parenchymal cells (NPC) were mixed in a specific ratio and plated into a 24-well plate containing a Honeycomb membrane. The membrane has 396 small wells that support spheroid formation. Images were captured after plating as indicated. The spheroids started to form at Day 7 and crash after 21 days.

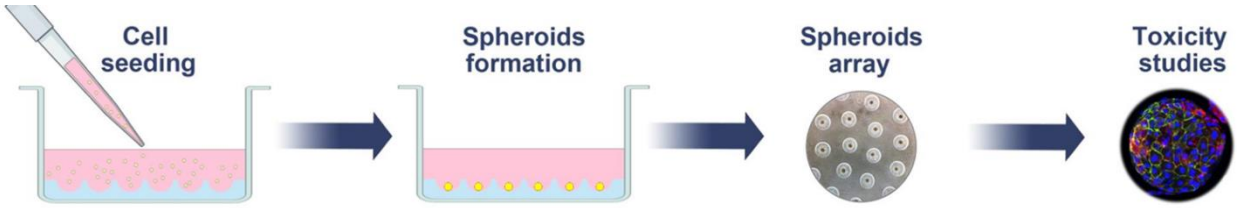

Figure 3: Flow-chart of spheroid formation in honeycomb membrane and the followup assays

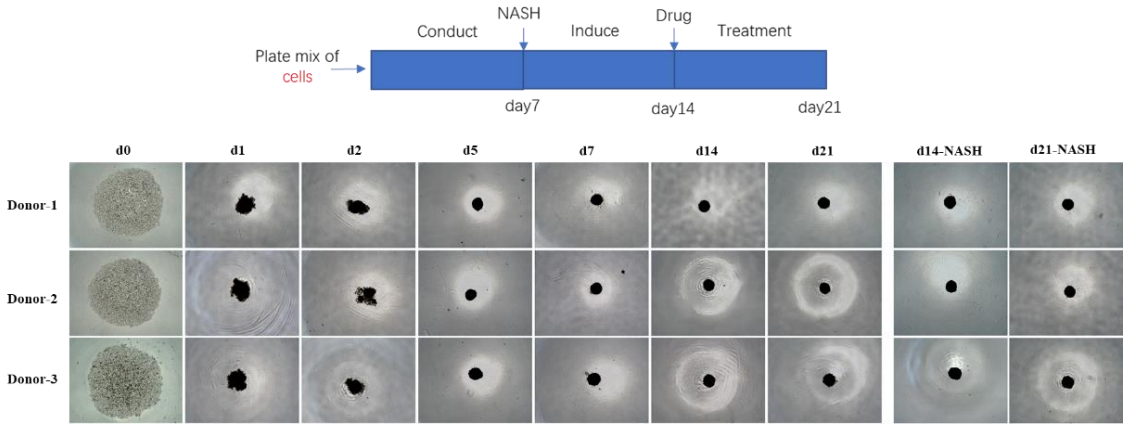

Figure 4, Establishment of NASH spheroids: Liver cells were combined and seeded into a 96-well plate. On Day 7, treatments were introduced to induce NASH. The images above show the successful formation of NASH spheroids from three individual donors. After several days of culture, round and clear spheroids were formed. Following one week of induction, the NASH spheroids were ready for drug treatment applications.

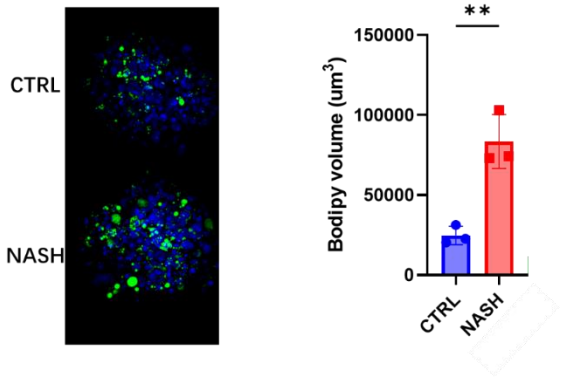

Figure 5, Lipid changes comparing NASH and Control spheroids: On Day 7, treatments were applied to induce NASH. After two weeks of treatment, both control and NASH spheroids were fixed and stained with Bodipy (green) and DAPI (blue). The Bodipy intensity for each spheroid was measured and normalized to DAPI, as shown on the right.

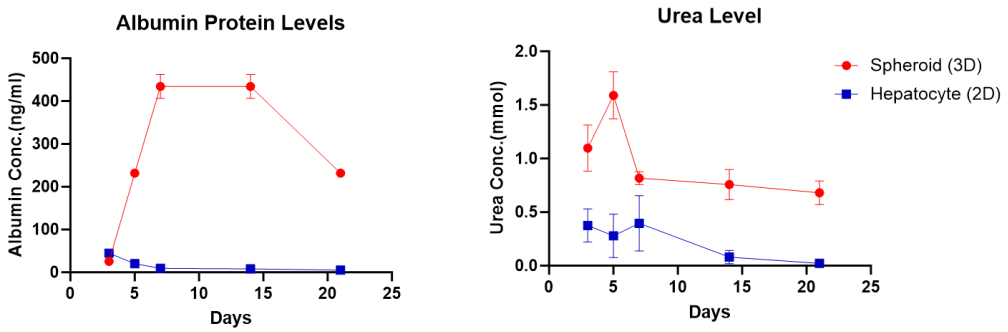

Figure 6, Albumin and urea secreation from hepatocytes and liver spheroids: Primary human hepatocytes, (PHH) and the spheroids from the same donor were cultured over a period of time. Supernatants were collected on the indicated days. Albumin (left) and urea(right) levels were measured using ELISA. The results show that liver spheroids secrete higher levels of albumin and urea (red) compared to PHH (blue).

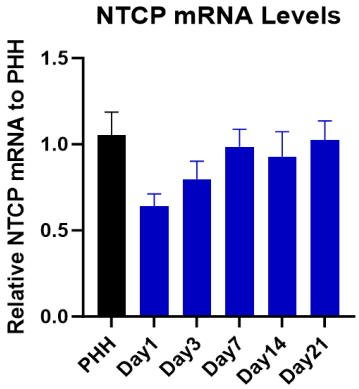

Figure 7, NTCP expression in liver spheroids: Liver spheroids were collected from Days 1, 3, 7, 14, and 21. The mRNA of Sodium Taurocholate Cotransporting Polypeptide (NTCP) were detected by qPCR. The graph in the left demonstrates that liver spheroids maintain stable NTCP expression throughout the culture period, indicating their ability to sustain functional characteristics over time. Data are presented as relative NTCP mRNA levels, normalized to primary human hepatocyte (PHH).

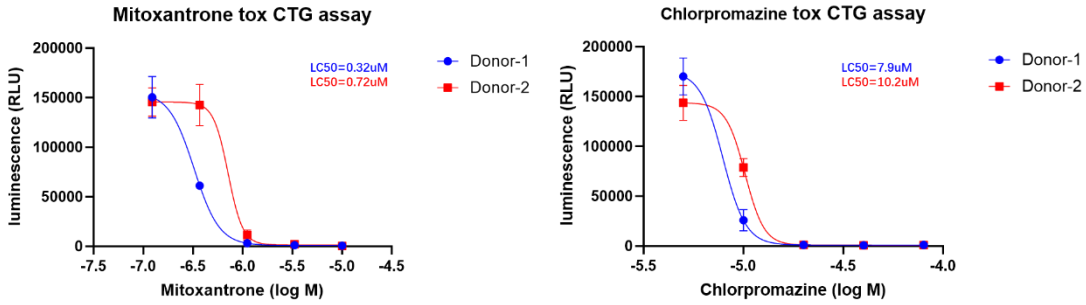

Figure 8, Hepatoxicity assessment in liver spheroids: Liver spheroids from two donors (red and blue) were treated with either Chlorpromazine (CPZ) on the right or Mitoxantrone on the left to evaluate their hepatotoxicity. Dose-response curves were generated based on CTG assay. The results highlight the sensitivity of liver spheroids in detecting hepatotoxicity, emphasizing their potential as a reliable model for drug safety testing.

Applications

1. Hepatotoxicity
2. Drug discovery and screening
3. Liver disease modeling
4. Translational pharmacology
5. Non-invasive liver imaging

Ordering Information

Product	Size	Catalog Number
Human Hepatic Spheroids	96-well plate	TDC-T1101
Hepatic Spheroid Culture Kit	1	TDM-1010K
Hepatic Spheroid Culture Base Medium	250 ml	TDM-1010
Hepatic Spheroid Culture Supplement	1 ml	TDM-1010SA

Protocols

1. Hepatic Spheroid Medium preparation (200ml):

Hepatocyte Culture Base Medium (Cat# TDM-1012):	250ml
Hepatocyte Culture Supplement A (Cat# TDM-1012SA)	0.5ml

2. Culturing and maintaining liver spheroids

1) Once receiving the plates containing liver spheroids, put the incubators at 37C, 5% CO2 immediately.
2) Prepare the hepatic spheroid medium as described above and stored in 4C.
3) Half medium change on the day when the plates are received.
4) Half medium change every two days for the rest of study.

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.