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Human Brain Microvascular Endothelial Cells (HBMVEC)

Catalog Number	10HU-051	**Cell Number**	0.5 million cells/vial
Species	*Homo sapiens*	**Storage Temperature**	Liquid Nitrogen

Description

The human brain microvascular endothelial cells (HBMVEC) are the major element of the blood-brain barrier that shields the brain against toxins and immune cells via paracellular, transcellular, transporter, and extracellular matrix proteins [1]. HBMVEC are morphologically different from the peripheral endothelium. Brain endothelial cells lack fenestrations, have minimal pinocytic activity, are connected by tight junctions and have a large number of mitochondria associated with high metabolic activity [2]. Like peripheral endothelial cells, however, HBMVEC express, or can be induced to express, cell adhesion molecules on their surface that regulate the extravasation of leukocytes into the brain. HBMVEC have been widely used for studying the molecular and cellular function of blood-brain barrier [3].

iXCells Biotechnologies provides high quality HBMVEC, which are isolated from human brain and cryopreserved at P1, with ≥ 0.5 million cells in each vial. These HBMVEC express von Willebrand Factor (vWF), CD31 (PECAM), and Dil-Ac-LDL by uptake. They are negative for HIV-1, HBV, HCV, mycoplasma, bacteria, yeast, and fungi and can be further expanded for no more than 3 passages in Endothelial Cell Growth Medium (Cat# MD-0010) under the conditions suggested by iXCells Biotechnologies. Further expansion may decrease the purity.

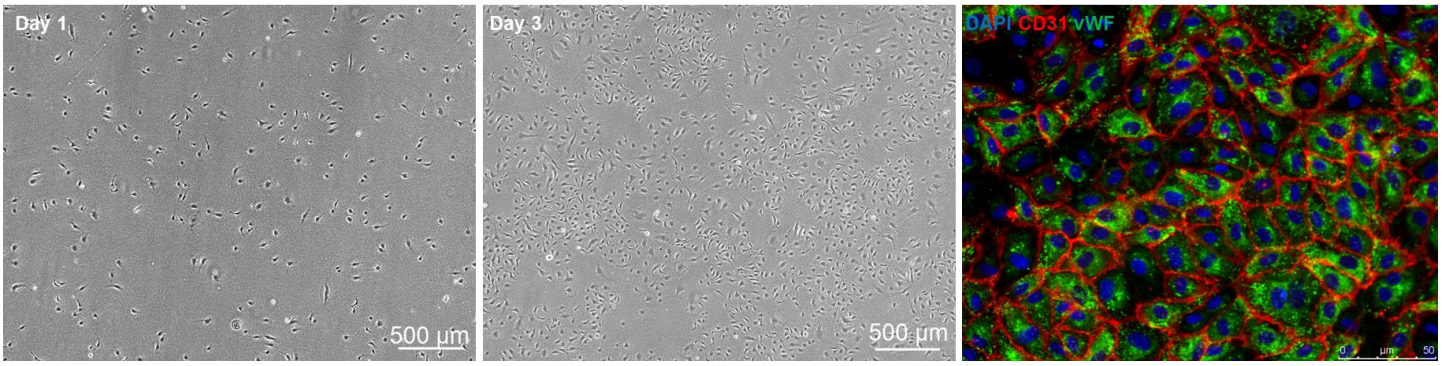

Figure 1. Phase contrast image of HBMVEC on day 1 and day 3 post recovery. Immunofluorescence staining of HBMVEC with antibodies against CD31 (Red) and vWF (Green).

Product Details

Tissue	Human brain
Package Size	0.5 million cells/vial
Passage Number	P1
Shipped	Cryopreserved
Storage	Liquid nitrogen
Growth Properties	Adherent
Media	Endothelial Cell Growth Medium (Cat# MD-0010)

Protocols

Thawing of Frozen Cells

1. Upon receipt of the frozen cells, it is recommended to thaw the cells and initiate the culture immediately in order to retain the highest cell viability.
2. To thaw the cells, put the vial in 37°C water bath with gentle agitation for ~1-2 minutes. Keep the cap out of water to minimize the risk of contamination.
3. Pipette the cells into a 15 mL conical tube with 5 mL fresh **Endothelial Cell Growth Medium** (Cat# MD-0010).
4. Centrifuge at 1,000 rpm (~220 *g*) for 5 minutes under room temperature.
5. Remove the supernatant and resuspend the cells in desired volume of Endothelial Cell Growth Medium.
6. Culture the cell in T75 flask or the desired culture vessel. Change the medium every other day until cells reach 80-90% confluence. We recommend seeding at 5×10^3 cells/cm^2.

Safety Precaution: *it is highly recommended that protective gloves and clothing should be used when handling frozen vials.*

Standard Culture Procedure

1. When cells reach ~80-90% confluence, remove the medium, and wash once with sterile PBS (5 mL/T75 flask).
2. Add ~2.5 mL of 0.05% Trypsin-EDTA to the flask and incubate for ~3 minutes at 37°C. Neutralize the enzyme by adding 2-3 volumes of cell culture medium.
3. Centrifuge at 1,000 rpm (~220 *g*) for 5 minutes and resuspend the cells in desired volume of medium.
4. Seed in the new culture vessels at 5×10^3 cells/cm^2. Change the medium every other day until cells reach 80-90% confluence.

Reference

[1] Abbott, N. J., Patabendige, A. A., Dolman, D. E., Yusof, S. R., & Begley, D. J. (2010). Structure and function of the blood-brain barrier. Neurobiology of disease, 37(1), 13–25.

[2] Yang, C., Hawkins, K. E., Doré, S., & Candelario-Jalil, E. (2019). Neuroinflammatory mechanisms of blood-brain barrier damage in ischemic stroke. American journal of physiology. Cell physiology, 316(2), C135–C153.

[3] Godinho-Pereira, J., Garcia, A. R., Figueira, I., Malhó, R., & Brito, M. A. (2021). Behind Brain Metastases Formation: Cellular and Molecular Alterations and Blood-Brain Barrier Disruption. International journal of molecular sciences, 22(13), 7057.

Disclaimers