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Product Information

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 and comprise the primary limitation to passage of substances, both soluble and cellular, from the blood into the brain. HBMVEC utilize unique features that distinguish themselves from those of peripheral endothelial cells. Most prominent among these are the following: 1) intercellular 'tight junctions' that display high transendothelial electrical resistance and retard paracellular flux [1], 2) absence of fenestrae and a reduced level of fluid-phase endocytosis [2], and 3) asymmetrically-localized enzymes and carrier-mediated transport systems that engender a truly 'polarized' phenotype. 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 has been widely used for studying the molecular and cellular basis of blood-brain barrier.

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 vWF/Factor VIII, CD31 (PECAM), and DiI-Ac-LDL by uptake. They are negative for HIV-1, HBV, HCV, mycoplasma, bacteria, yeast, and fungi and can further expand no more than 3 passages in Endothelial Cell Growth Medium (Cat# MD-0010) under the condition suggested by iXCells Biotechnologies. Further expansion may decrease the purity.

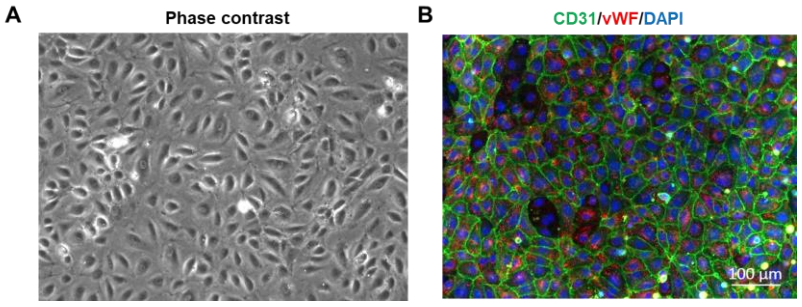

Figure 1. Human Brain Microvascular Endothelial Cells (HBMVEC). **(A)** Phase contrast image of HBMVEC. **(B)** Immunofluorescence staining with antibodies against CD31 and vWF/Factor VIII.

Product Details

Tissue	Human brain
Package Size	0.5 x 10^6 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 minute. Keep the cap out of water to minimize the risk of contamination.
3. Pipette the cells into a 15mL conical tube with 5ml 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 Endothelial Cell Growth Medium (Cat# MD-0010).
6. Culture the cell in T75 flask. Change the medium every other day until cells reach 80-90% confluence.

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

Standard Culture Procedure

1. HBMVEC can be cultured in **Endothelial Cell Growth Medium** (Cat# MD-0010).
2. When cells reach ~80-90% confluence, remove the medium, and wash once with sterile PBS (5mL/T75 flask).
3. Add ~2.5mL 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.
4. Centrifuge 1,000 rpm (~220 g) for 5 minutes and resuspend the cells in desired volume of medium.
5. Seed new culture vessels at 5 × 10^3 cells/cm^2. Change the medium every other day until cells reach 80-90% confluence.

Reference

[1] Crone, C. and Oleson, S. P. (1992) Electrical resistance of brain microvessel endothelium. Brain Res. 241: 49-55.

[2] Reese, T. S. and Karnovsky, M. J. (1967) Fine structural localization of blood-brain barrier to exogenous peroxidase. J. Cell Biol. 34:9-14. [3] Vorbrodt, A. W. (1988) Ultrastructural cytochemistry of blood-brain barrier endothelia. Prog. Histochem. Cytochem. 18(3):1-96.

Disclaimers