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Product Information

Rat Brain Microvascular Endothelial Cells (RBMEC)

Catalog Number	10RA-009	Cell Number	0.5 x 10^6 cells/vial
Species	*Rattus norvegicus*	Storage Temperature	Liquid Nitrogen

Description

Brain microvascular endothelial cells (BMEC), the major component of the blood-brain barrier, limit the passage of substances, both soluble and cellular, from the blood into the brain. BMEC utilize unique features to distinguish themselves from peripheral endothelial cells, such as 1) intercellular tight junctions that display high electrical resistance and slow paracellular transport, 2) the absence of fenestrae and a reduced level of pinocytic activity, and 3) the expression of specialized pumps that can transport compounds out of the brain via the blood-brain barrier [1-3]. Similar to peripheral endothelial cells, BMEC express, or can be induced to express, cell adhesion molecules on their surface that regulate the extravasation of leukocytes into the brain. Cultured rat BMEC have been widely used for studying the molecular and cellular properties of blood-brain barrier because of their unique functions. Understanding the molecular mechanisms of blood-brain barrier regulation may help to optimize drug delivery to the CNS and elucidate new therapies for CNS diseases.

iXCells Biotechnologies provides high quality Rat Brain Microvascular Endothelial Cells (RBMEC), which are isolated from adult rat brain and cryopreserved at P1, with >0.5 million cells in each vial. RBMEC express vWF/Factor VIII and CD31 (PECAM). They are negative for HIV-1, HBV, HCV, mycoplasma, bacteria, yeast, and fungi and can further expand for 5 population doublings in Endothelial Cell Growth Medium (Cat# MD-0010) under the condition suggested by iXCells Biotechnologies.

Product Details

Tissue	Rat Brain Microvascular Endothelial Cells (RBMEC)
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 Rat Brain Microvascular Endothelial Cells (RBMEC), it is recommended to thaw the cells and initiate the culture immediately in order to retain the highest cell viability.
2. Pre-coat the culture dishes or flasks with 0.01% poly-L-lysine or rat collagen I for more than one hours at 37^{o}C before use.
3. 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.
4. Pipette the cells into a 15ml conical tube with 5ml fresh Endothelial Cell Growth Medium (Cat# MD-0010).
5. Centrifuge at 1,000rpm (~220g) for 5 minutes under room temperature.
6. Remove the supernatant and resuspend the cells in fresh culture medium.
7. Culture the cells in 100 mm poly-L-lysine coated culture dish or T75 flask.

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

Standard Culture Procedure

1. RBMEC 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 0.25% 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 1,000rpm (~220g) for 5min and resuspend the cells in desired volume of medium.
5. Seed the cells on the poly-L-lysine coated culture vessels at 5 × 10^3 cells/cm^2.

References

[1] Crone C, Oleson SP. (1992) "Electrical resistance of brain microvessel endothelium." Brain Res. 241: 49-55.
[2] Reese TS, Karnovsky MJ. (1967) "Fine structural localization of blood-brain barrier to exogenous peroxidase." J Cell Biol. 34: 9-14.
[3] Wolburg H, Neuhaus J, Kniesel U, Kraub B, Schmid EM, Ocalan M, Farrell C, Risau W. (1994) "Modulation of tight junction structure in blood-brain barrier endothelial cells." J Cell Sci. 107: 1347-1357.

Disclaimers