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Product Information

Human Mesenchymal Stem Cells-Bone Marrow (HMSC-bm)

Catalog Number	10HU-217	Cell Number	0.5 million cells/vial
Species	*Homo sapiens*	Storage Temperature	Liquid Nitrogen

Description

Mesenchymal Stem Cells (MSC), also termed Mesenchymal Stromal Cells, are self-renewing multipotent cells that can differentiate into a wide variety of cell types. MSC have been shown to differentiate in vitro into adipocytes, chondrocytes, osteoblasts, myocytes, and pancreatic islets cells. They can also transdifferentiate into neuronal cells and hepatocytes [1].

iXCells Biotechnologies offers normal Human Mesenchymal Stem Cells (HMSC) isolated from bone marrow. These cells are expanded for one passage in Adipose-derived Stem Cell Growth Medium (Cat # MD-0003) and then cryopreserved at primary passage. iXCells HMSC are positive for CD73, CD90, CD105, and negative for CD14, CD34, CD45. HMSC are negative for HIV-1, HBV, HCV, mycoplasma, bacteria, yeast, and fungi. HMSC can be further expanded in Mesenchymal Stem Cell Medium (Cat # MD-0037).

Product Details

Tissue	Human bone marrow
Package Size	0.5 million cells/vial
Passage Number	P2
Shipped	Cryopreserved
Storage	Liquid nitrogen
Growth Properties	Adherent
Media	Mesenchymal Stem Cell Medium (Cat # MD-0037) Adipocyte Differentiation Medium (Cat # MD-0005) Osteogenic Differentiation Medium (Cat # MD-0006)

Protocols

Standard Culture Procedure

1. Upon receipt of the frozen HMSC, 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 Mesenchymal Stem Cell Medium (Cat # MD-0037).
4. Centrifuge at 1,000rpm (~220g) for 5 minutes under room temperature.
5. Remove the supernatant and re-suspend the cells in fresh Mesenchymal Stem Cell Medium (Cat # MD-0037).
6. Culture the cell in 1 100 mm dish or 1 T75 flask. Change medium every 3~4 days.
7. When cells reach >85% confluence, freeze them or subculture cells as following
8. Aspirate the culture medium, and wash once with sterile PBS (5ml/T75 flask).
9. Add ~2 ml 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.
10. Centrifuge 1,000rpm (~220g) for 5min and re-suspend the cells in desired volume of medium.
11. Seed new culture vessels 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.*

Adipocytes Differentiation Protocol

1. Culture HMSC in Mesenchymal Stem Cell Medium (Cat # MD-0037) until cell reach > 95% confluence.
2. Aspirate the medium, replace with new Adipose-Derived Stem Cells Growth Medium, and let cells grow for 2~3 more days.
3. Aspirate the medium, apply Adipocyte Differentiation Medium (Cat # MD-0005) to the cells. Change adipocytes differentiation medium every 3~4 days for up to 2 weeks. The accumulation of lipid droplets in cytoplasm will appear after 1 week.

Osteogenic Differentiation Protocol

1. Grow HMSC in Mesenchymal Stem Cell Medium (Cat # MD-0037) to ~80% confluency.
2. Carefully aspirate growth medium, apply 1.5 ml Osteogenic Differentiation Medium per well (Cat# MD-0006) to the cells.
3. Change fresh Osteogenic Differentiation Medium every 3 days. Be careful not to disturb the cell monolayer.
4. Culture the cells for more than 21 days and osteoblasts can be detected by Alizarin Red S staining (stain the extracellular calcium deposit).

References

[1] Dominici M, Le Blanc K, Mueller I, Slaper-Cortenbach I, et al., Cytother 2006, 8(4):315-7.

Disclaimers

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