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Product Information Sheet

Human Osteogenic Differentiation Media

Catalog Number: MR1009

Product Overview	
Product Name	**Human Osteogenic Differentiation Media**
Catalog #s	MR1009
Quantity	450 mL
Product Form	Liquid
Cell Types	Human mesenchymal stem cells
Reagents Needed	Customer choice of high-grade or fully defined Fetal Bovine Serum (FBS) (not included) Penicillin/Streptomycin/Amphotericin B solution or Penicillin/Streptomycin solution, 100X (not included)[1]

Product Description

Human Osteogenic Differentiation Media

Human Osteogenic Differentiation Media is a high-performance formulation designed to promote the efficient differentiation of mesenchymal stem cells (MSCs) into osteoblasts, the bone-forming cells [i]. This complete media system provides the essential nutrients, growth factors, and differentiation signals required for consistent and reproducible osteogenic induction. It is ideal for applications in bone tissue engineering, regenerative medicine, orthopedic research, and drug discovery.

Our Human Osteogenic Differentiation Media is compatible with various animal-origin serums, allowing researchers to customize supplementation based on experimental needs. This flexibility ensures optimal cell differentiation while maintaining consistency in mineralization assays and bone matrix formation studies.

Engineered for superior cell viability and functionality, this media enhances the efficiency of osteoblast differentiation, supporting robust mineral deposition and bone matrix production. By minimizing batch-to-batch variability, it improves data reproducibility, streamlining osteogenesis-related research. Whether used for skeletal tissue studies, biomaterial testing, or pharmaceutical research, this formulation provides the reliability and precision necessary for advanced stem cell applications.

By offering a stable and optimized environment for osteogenic differentiation, our media simplifies workflows and accelerates experimental timelines. Researchers can confidently use this formulation to explore bone biology, evaluate potential therapeutics, and investigate metabolic bone disorders.

Recommended Uses:

For use with the following cell types:

- Human Bone Marrow-Derived Mesenchymal Stem Cells (CR1005-500)

Shipping & Storage:

- We ship media with gel packs to maintain stability and preserve critical components.
- Store at the recommended temperature upon arrival to ensure maximum shelf life and performance.

Note: This product is designed and tested to function with Cellular Engineering Technologies Inc. ("CET") product CR1004-500 Human Adipose-Derived Mesenchymal Stem Cells (MSCs), CR1005-500 Human Bone Marrow-Derived Mesenchymal Stem Cells (MSCs), and CR1006-500 Human Amniotic Membrane Derived Mesenchymal Stem Cells (MSCs) (not included). Although investigators are welcome to use this product with other human mesenchymal stem cells, CET cannot guarantee this product's performance with an unknown cell type. Additionally, such use of third-party cell lines with this product will void CET's warranty should they not function as indicated. Please refer to CET's Terms & Conditions, which are available on www.cet.bio.

Product Image

Media Formulation Instructions

FOR RESEARCH APPLICATIONS ONLY. NOT FOR DIAGNOSTIC OR THERAPEUTIC USE.

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Defrosting / Preparation	Defrost 50mL of FBS (not included) and 5mL of antibiotic/antimycotic solution (not included) in a 37°C water bath until ice in the tubes are no longer visible. Immediately disinfect the tubes and the bottle containing this base media with 70% isopropanol (not included).
Mixing	Working in a laminar flow hood, remove 5mL of the base media from the bottle and discard. This and all other procedures must be done in a sterile manner. Add 50mL of FBS to the base media. Add 5mL of the antibiotic/antimycotic solution to the base media[1]. Cap the bottle containing the mixed liquid solution and gently swirl a few times. This formulated media is now considered complete media and ready to use with cells.
Cell Thawing and Plating Instructions (for CR1005-500 Human Bone Marrow-Derived Mesenchymal Stem Cells not included)	
Thawing	Remove the vial of Human Bone Marrow-Derived Mesenchymal Stem Cells (CR1005-500) (not included) from dry ice. Defrost the vial of cells in a 37°C water bath with constant, moderate agitation until ice in the ampoule is barely visible. DO NOT OVERTHAW. Immediately disinfect the vial with 70% isopropanol (not included), making sure no isopropanol enters the vial.
Plating	Working in a laminar flow hood, open the vial and transfer the contents to a sterile 15 mL tube. Very slowly, add approximately 10 mL of complete media (see Media Formulation Instructions), pre-warmed to 37°C before use. Centrifuge suspended cells at 200 x g for 10 minutes. Decant the medium and gently resuspend the pellet in the appropriate amount of complete media necessary to achieve a plating density of 20,000 cells/cm2 of surface area. After 24 hours, aspirate media from the flask or dish, rinse with 1X Dulbecco's Phosphate Buffered Saline (not included), and replenish with fresh complete media, pre-warmed to 37°C before use.
Observation/ Expansion	It is normal for these cells to grow slowly initially, for a period of one-week post-thaw. It is also normal for some cells to be shed during media changes. Subculture cells at a 1:3 split ratio using 0.25% Trypsin/EDTA (not included).

Storage and Stability		
	Storage Temperature	**Storage Time**
Human Osteogenic Differentiation Media	4°C	3 months
Human Bone Marrow-Derived Mesenchymal Stem Cells (not included)	-80°C (preferably in the vapor phase of a liquid nitrogen storage unit)	12 months
complete media *(see Media Formulation Instructions)*	2-8°C	Not applicable
Avoid repeated exposure to room temperature and light.		

Publications and Product Citations
MicroRNA-92a overexpression promotes the osteogenic differentiation of bone mesenchymal stem cells by impeding Smad6-mediated runt-related transcription factor 2 degradation Yan X. et al. | Molecular Medicine Reports 2018 JUN **School of Medicine, Dalian Medical University.**
Adipose-derived mesenchymal stem cells promote the survival of fat grafts via crosstalk between the Nrf2 and TLR4 pathways Chen X. et al. | Cell Death & Disease **Department of Stem Cell Research Institute, Fujian Medical University.**
Low oxygen tension enhances proliferation and maintains stemness of adipose tissue-derived stromal cells Yamamoto, Y. et al. | BioResearch 2013 JUN **Division of Environmental Medicine, National Defense Medical College Research Institute, National Defense Medical College, Tokorozawa.**
Culture media for the differentiation of mesenchymal stromal cells Vater, C. et al. | Acta Biomaterialia 2011 FEB **Department of Orthopedic Surgery, University Hospital Carl Gustav Carus, Dresden.**

[1] These solutions should be portioned in 5mL aliquots, stored at -20C and never frozen/thawed. Although antimycotics are not necessary, CET highly recommends their usage for long-term cell culture. Antibiotics and antimycotics should not be used as an alternative to proper aseptic techniques.

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