Human Dendritic Cell (MODC) Care Manual

INSTRUCTION MANUAL ZBM0112.01

SHIPPING CONDITIONS

- **Human Dendritic Cells, cryopreserved**
- All US and Canada orders are shipped via Federal Express Priority service and are usually received the next day. International orders are shipped using dry ice or using a dry vapor shipper (if transit time will exceed 3 days). Primary human cells can be sensitive to extended times (> 3 days) transported using dry ice. Please inquire for dry vapor shipper availability if your transit time will exceed 3 days. Cells should always be stored in liquid nitrogen vapor phase immediately upon arrival. **Must be processed immediately upon shipment receipt.**

STORAGE CONDITIONS

- **Cryopreserved cells:** Vials of frozen dendritic cells are to be stored in vapor phase nitrogen (-150°C to -190°C) IMMEDIATELY upon arrival.
- **Lymphocyte Medium**: Media: 30 days from ship date 4°C 6 months -20°C

All Zen-Bio Inc products are for research use only. Not approved for human or veterinary use or for use in diagnostic or clinical procedures.

ORDERING INFORMATION AND TECHNICAL SERVICES

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THIS MANUAL IS SUITABLE FOR USE WITH THE FOLLOWING PRODUCTS:

SER-MODC-F	HUMAN MONOCYTE DERIVED DENDRITIC CELLS CRYOPRESERVED, 1 MILLION CELLS/VIAL

LIMITED PRODUCT WARRANTY

This warranty limits our liability for replacement of this product. No other warranties of any kind, expressed or implied, including without limitation implied warranties of merchantability or fitness for a particular purpose, are provided by Zen-Bio, Inc. Zen-Bio, Inc. shall have no liability for any direct, indirect, consequential, or incidental damages arising out of the use, the results of use, or the inability to use this product.

Zen-Bio, Inc warrants its cells only if Zen-Bio media are used and the recommended protocols, media, and storage conditions are followed. Cryopreserved human blood-derived cells are assured to be viable when thawed according to Zen-Bio protocols.

Contact ZenBio, Inc. within no more than 24 hours after receipt of products for all claims regarding shipment damage, incorrect ordering or other delivery issues. Delivery claims received after 7 days of receipt of products are not subject to replacement or refund.

PRECAUTIONS

This product is for research use only. It is not intended for human, veterinary, or in vitro diagnostic use. Proper precautions and biological containment should be taken when handling cells of human origin, due to their potential biohazardous nature. Always wear gloves and work behind a protective screen when handling primary human cells. All media, supplements, and tissue culture ware used in this protocol should be sterile.

To comply with U.S. Food and Drug Administration (FDA) regulations, these products are not for use in Clinical Diagnostic or Therapeutic Procedures.

By your acceptance of these products, you are acknowledging that these products will be:

1. Treated as potentially contaminated biological specimens even if accompanying serological reports are negative;
2. Handled by establishing or following appropriate safety control procedures to ensure the safety of using these products.

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INTRODUCTION

Dendritic cells act as messenger cells of the immune system by processing antigens from pathogens and presenting the antigens to T cells to initiate an immune response B cells are lymphocytes that play a large role in the humoral immune response.

The dendritic cells are derived from the peripheral blood of consented adult donors in the United States. Each sample is derived from a competent volunteer adult donor who has signed an Institutional Review Board (IRB) or US Food and Drug Administration (FDA) validated donor consent form that specifically lists both the intended uses for the donation for non-clinical research and confirms the procedures for processing the samples are Standard Operating Procedure (SOP) managed Good Laboratory Practices (GLP) protocols in compliance with ethical regulations. All samples are collected and processed in the United States.

Monocytes isolated from peripheral blood can be differentiated to immature dendritic cells through culturing them in the presence of IL-4 and GM-CSF for 5-7 days. Immediately after differentiation, the dendritic cells are cryopreserved using a serum-free, animal component-free cryopreservation medium. Each vial contains 1 million viable cells per vial.

QUALITY CONTROL

Quality control tests are performed for each lot of dendritic cells. The cells are assessed for viability and characterized by their surface markers via flow cytometry. The cells are positive for CD14, CD11b,and CD209. Population distributions expressed as percentage positive are presented on the certificate of analysis for each lot of cells. Cells have a guaranteed purity of >90% and a viability >80%.

Each lot is tested and found non-reactive to viral DNA from Hepatitis B and viral RNA from HIV 1, HIV-2 and Hepatitis C. Hepatitis B Surface antigen (HBsAg) and HIV antibody (Ab) and STS (Syphilis) are also found non-reactive by US Food and Drug Administration (FDA) licensed tests. No known test can offer complete assurance that these viruses are not present. Since we cannot test all pathogens, always treat the culture as a potentially infectious reagent. We recommend using the US Centers for Disease Control (CDC) Universal Precautions for prevention of blood-borne pathogens as a minimum guideline for standards of practice at Biosafety Level 1 or higher.

MATERIALS PROVIDED FOR EACH CATALOG ITEM

- **Cryopreserved Monocyte Derived Dendritic Cells** - Cat# SER-MODC-F
  Frozen vial containing 1.0 million viable cells/vial
  Store in vapor phase liquid nitrogen immediately upon arrival.

LYMPHOCYTE MEDIUM COMPOSITION

Recommended product for thawing.

Cat# LYMPH-1 (100ml); LYMPH-1-50 (50ml)
RPMI 1640
L-Glutamine
Fetal Bovine Serum (FBS)
DNAse I
Penicillin
Streptomycin
Amphotericin B

THAWING CRYOPRESERVED DENDRITIC CELLS

1. Warm the appropriate medium that will be used to thaw the cells to 37°C.

2. Rapidly thaw the vial of frozen cells in a 37°C water bath until just prior to complete thawing (slurry of residual ice should be present). Wipe the outside of the vial with 70% ethanol.

3. Aseptically transfer the cell suspension to a 50mL conical tube.

4. Rinse the vial with 1 mL of medium. Then slowly add drop wise to the cells in the 50 mL conical tube while gently swirling the tube.

5. Slowly add medium drop wise to the 50 mL tube until the total volume reaches 25 ml.

6. Centrifuge the cell suspension at 400x g at room temperature for 10 minutes.

7. Carefully remove the supernatant and save in a second tube leaving 1 mL behind as not to disturb the pellet. Gently resuspend the cells up to a volume of 2 mL (2 mL per vial of product). Count the number of cells. If count is lower than expected, centrifuge the wash that was saved at a higher speed, count and combine if necessary.

8. Gently resuspend cells to desired concentration.

TROUBLESHOOTING GUIDE

Observation	Possible causes	Suggestions
Dendritic Cells do not grow	1. We do not recommend expanding the cells	1. Do not expand cells, use directly in assay
Edge effects	1. Medium in outside wells evaporated	1. Ensure a saturated humidity in the incubator and feed the cells no less than every 3 days. Make sure multiple plates are stacked no more than 3 plates high.

FREQUENTLY ASKED QUESTIONS

1. **Must I use your Lymphocyte Medium?** Yes, we strongly recommend the use of our Lymphocyte Medium to thaw the cells as it will prevent clumping and maximize viability upon thawing. If you are using a homemade formulation and not achieving success, please use our Lymphocyte Medium in a variety of convenient sizes to suit your needs (catalog # LYMPH-1, LYMPH-1-50).

2. **Can I use your Lymphocyte Medium to culture my cells?** No. Our Lymphocyte Medium is NOT a culture or a growth medium. It is a medium designed to successfully thaw blood derived cells with high viability and less clumping of the subpopulations of cells that remain in suspension.

3. **Do you test for pathogens? Which ones?** Yes. Samples from each donor are tested via PCR to confirm non-reactivity for HIV-1, HIV-2, Hepatitis B, Hepatitis C, and syphilis. However, since we cannot test all pathogens, please treat the culture as a potentially infectious agent at Biosafety Level 1 (BSL-1) or higher.

4. **What donor information do I receive?** The donor's age, race, and gender are provided in the certificate of analysis that accompanies each lot of cells.

5. **Do you have any protocols for ways to use the cells?** No. We do not provide any protocols for the use of the peripheral blood mononuclear cells. The uses for this product are too varied to provide a comprehensive protocol suitable for each experiment.

6. **My cells have low viability and are clumping upon thawing. Is there a problem with my cells?** We first eliminate any shipping or storage issues as a potential source of your issues. All our cells are quality tested with a minimum viability greater than 80% upon thawing from cryopreservation. We strongly suggest the use of our Lymphocyte Medium to thaw the cells as it will prevent clumping and maximize viability upon thawing. If you are using a homemade

formulation and not achieving success, please use our Lymphocyte Medium (catalog # LYMPH-1, LYMPH-1-50).

7. **My cells are not attaching or proliferating. What is wrong?** Nothing is wrong. We recommend that you thaw and use the cells directly. The factors used to treat your cells will depend on your research goal. Our Lymphocyte Medium is NOT a culture or growth medium but a medium designed to successfully thaw blood derived cells.

8. **May I re-freeze any cells after my experiment?** No**.** We do not recommend re-freezing any blood derived cells.

PATHOGEN TESTING

Each lot is tested and found non-reactive to viral DNA from Hepatitis B and viral RNA from HIV 1, HIV-2 and Hepatitis C. Hepatitis B Surface antigen (HBsAg) and HIV antibody (Ab), and STS (Syphilis) are also found non-reactive by US Food and Drug Administration (FDA) licensed tests. No known test can offer complete assurance that these viruses are not present. Since we cannot test all pathogens, always treat the culture as a potentially infectious reagent. We recommend using the US Centers for Disease Control (CDC) Universal Precautions for prevention of blood-borne pathogens as a minimum guideline for standards of practice at Biosafety Level 1 or higher.