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Product Datasheet

NutriFreez® D5 Salt Based Cryopreservation Solution

Executive Summary

NutriFreez® D5 Salt Based Cryopreservation Solution is an optimal all-in-one solution, chemically defined and specially designed for freezing and thawing of cells intended for cell therapies and clinical applications. It provides a defined, protective environment in ultra-low temperatures (-196°C), thus ensuring high viability, recovery rates, and performance even for extremely sensitive cells. While every lot is tested on MSCs as part of the broad QC tests, NutriFreez® D5 has been widely tested on various other cells, such as hPSCs, PBMCs, NK, and Vero cells. NutriFreez® D5 is manufactured under cGMP conditions and offers industry-leading performance. The product is optimally formulated, contains 5% DMSO and does not contain any antibiotics, antimycotics, hormones, growth factors, serum, or protein.

Unique Selling Points

- Ready-to-use, simple protocol
- Fully defined medium
- Ideal for serum-free applications
- Animal component-free
- Serum-free and protein-free
- cGMP manufactured
- Sterility, endotoxin, and cell-based quality control testing
- Lot-to-lot consistency
- Drug Master File coming soon

Suitability of NutriFreez® D5 Salt Based Cryopreservation Solution for hMSCs from Various Sources



A. NutriFreez[®] D5 Salt Based Cryopreservation Solution



31 × 10³ cells/cm₂ 46 × 10³ ce

46 × 10³ cells/cm₂

39 × 10³ cells/cm₂

35 × 10³ cells/cm₂

Figure 1: Cell viability and morphology after freezing in NutriFreez[®] D5 Salt Based Cryopreservation Solution hMSCs derived from a variety of sources were frozen in NutriFreez[®] D5 Solution and Thawed (after being frozen for one week). The cells were seeded in a XF culture system. **A.** A comparison of cell viability (%) before and after freezing.

B. Representative images (X100) taken 3 days post seeding (cell recovery). The numbers represent the proliferation results (viable cells count). High proliferation and normal morphology are observed in all the cells.

NutriFreez® D5 Salt Based Cryopreservation solution promotes high viability and recovery of hMScs from various sources.

Relevant Applications

Freezing, thawing, and recovering of:

- hMSCs from various sources (e.g. AT, BM, CT, DP)
- hPSCs
- PBMCs
- NK cells
- Vero cells
- Long term Cryopreservation of cells intended for therapeutic applications

Relevant Process Steps

- Freezing cells
- Thawing frozen cells and recovery

Immunophenotyping of hMSCs After Cryopreservation in NutriFreez® D5 Salt Based Cryopreservation Solution

Flow cytometry analysis of hMSCs after being frozen in NutriFreez® D5 Salt Based Cryopreservation Solution



Figure 2: Immunophenotyping results of AT and BM MSCs using flow cytometry analysis - Immunophenotyping results (flow cytometry data and summary of marker expression) of Bone marrow and adipose tissue derived MSCs after being frozen in NutriFreez® D5 cryopreservation solution.

hMSCs maintain classical profile of MSC markers with low percentage of hematopoietic contamination after being frozen in NutriFreez® D5 Salt Based Cryopreservation Solution.

Karyotyping

MSCs from two donors were frozen in NutriFreez® D5 Salt Based Cryopreservation Solution and NutriFreez® D10 Cryopreservation Medium, thawed, expanded to passage P6 and prepared for karyotyping (performed at Rambam healthcare campus). The analysis results demonstrated the karyotype of all tested samples to be normal.



Figure 3: NutriFreez® D10 Cryopreservation Medium



Figure 4: NutriFreez® D5 Salt Based Cryopreservation Solution

MSCs After Cryopreservation in NutriFreez® D5 and Differentiation into Adipocytes, Osteocytes and Chondrocytes



Figure 5: Differentiation potential of cryopreserved AT-MSCs into the adipogenic, chondrogenic and osteogenic lineages Representative images of the differentiated AT-MSCs originating from a donor's MSCs, cryopreserved in NutriFreez® D5 Salt Based Solution. The cells were thawed at P2 and for passage P3/P4 seeded and grown in adipogenic, chondrogenic and osteogenic differentiation medium (BI), in order to evaluate the cryopreserved AT-MSCs stemness (Bourin et al., 2013). The cells were stained as follows: Adipocytes were stained on day 10 of adipogenic differentiation with Oil Red O Stock to visualize lipids and fat deposits (A); In osteocytes the calcium deposits in the cells were stained with Alizarin Red S on day 18-21 of osteogenic differentiation (B); in chondrocytes the sulfated proteoglycan present in cartilage tissue is stained on day 21 of chondrogenic differentiation with Alican Blue (C).

🖪 Technical Specifications

Attribute					
Volume (ml)	10 ml	100 ml	500 ml		
% DMSO	5	5	5		
QC Cells	hMSC	hMSC	hMSC		

Grace Ordering Information

Item	Description	Package Volume Quantity Size	Order Number
NutriFreez® D5	A Salt Based Protein Free, 5% DMSO Cryopreservation Solution	10 ml	05-715-1D
NutriFreez® D5	A Salt Based Protein Free, 5% DMSO Cryopreservation Solution	100 ml	05-715-1B
NutriFreez® D5	A Salt Based Protein Free, 5% DMSO Cryopreservation Solution	500 ml	05-715-1A

Peripherals and Accessories

Product Name		Description	Order Number
Dulbecco´s PBS (w/o Ca & Mg)		A buffer solution	02-023-1
Soybean Trypsin Inhibitor (SBTI)	Social Transition	A trypsin inhibitor solution	03-048-1
Cell dissociation solution - non enzyamtic	Hereitania Hereit	A non-enzymatic cell dissociation solution	03-071-1
MSC NutriStem® XF Basal Medium		A media for the expansion of MSCs	05-200-1
MSC NutriStem® Supplement Mix	Minut Minut Minut Minut	Supplementation for NutriStem Basal Medium	05-201-1
MSC Attachment Solution	PORTURAL Marca Association Marca Mar	A solution for the attachment of hMSCs on culture plates	05-752-1
Recombinant Trypsin Solution		A solution for the dissociation of adherent cells	03-078-1
Recombinant Trypsin-EDTA Solution		A solution for accelerated dissociation of adherent cells	03-079-1
NutriFreez® D10 Cryopreservation Medium		A solution for cryopreservation of cells (10% DMSO)	05-713-1
NutriStem® hPSC XF Medium		A media for the expansion of hPSCs	05-100-1

Contact Details

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