gibco
by life technologies

OpTmizer™ CTS™ T-Cell Expansion SFM

Description

OpTmizer™ CTS™ T-Cell Expansion SFM has been developed for the growth and expansion of human T lymphocytes. OpTmizer™ CTS™ T-Cell Expansion Medium is a complete serum-free, xenofree 1X medium consisting of OpTmizer™ CTS™ T-Cell Expansion Basal Medium with the addition of OpTmizer™ CTS™ T-Cell Expansion Supplement. Each container is a sterile filtered single use container.

Product	Catalog No.	Amount	Storage	Shelf Life*
OpTmizer™ CTS™ T-Cell Expansion SFM	A10485-01**	1 Kit		18 months
Contains:				
OpTmizer™ CTS™ T-Cell Expansion Basal Medium	A10221-01	1 × 1000 mL (Bottle)	2°C to 8°C; Protect from light	
OpTmizer™ CTS™ T-Cell Expansion Supplement	A10484-02	1 × 26 mL	2°C to 8°C; Protect from light	
OpTmizer™ CTS™ T-Cell Expansion SFM	A10485-03**	1 Kit		18 months
Contains:				
OpTmizer™ CTS™ T-Cell Expansion Basal Medium	A10221-03	1 × 1 L (Media Bag)	2°C to 8°C; Protect from light	
OpTmizer™ CTS™ T-Cell Expansion Supplement	A10484-02	1 × 26 mL	2°C to 8°C; Protect from light	

* Shelf Life duration is determined from Date of Manufacture.
** OpTmizer™ CTS™ T-Cell Expansion SFM is sold as a complete kit, components are not sold separately.

Intended Use

For human ex-vivo tissue and cell culture processing applications.

CAUTION: When used as a medical device, Federal law restricts this device to sale by or on the order of a physician.

Important Information

- **Do not freeze** OpTmizer™ T-Cell Expansion Supplement.
- Foaming may occur during shipment of the supplement, but will not impact performance of the product.
- Supports high density CD3+ T-cell cultures (e.g., >3 × 10^6 cells/mL) in static and (e.g., >2 × 10^7 cells/mL) WAVE Bioreactor™ cultures.

Safety Information

For every chemical, read the Safety Data Sheets (SDSs) and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves.

Human origin materials are non-reactive (donor level) for anti-HIV 1 & 2, anti-HCV and HBsAg. Handle in accordance with established bio-safety practices.

Prepare Media

OpTmizer™ CTS™ T-Cell Expansion Basal Medium requires supplementation with OpTmizer™ CTS™ T-Cell Expansion Supplement, and L-glutamine.

Note: For complete 1X medium preparation in the media bag, a needle syringe can be used to aseptically inject the supplement(s) into the media bag via the self sealing injection site.

1. For complete 1X medium, aseptically add to OpTmizer™ CTS™ T-Cell Expansion Basal Medium before use:
   - 26 mL/L of OpTmizer™ CTS™ T-Cell Expansion Supplement.
   - 10 mL/L of 200 mM L-glutamine solution for a final concentration of 2 mM.
2. Place the OpTmizer™ CTS™ T-Cell Expansion Basal Medium, OpTmizer™ CTS™ T-Cell Expansion Supplement and thawed L-Glutamine solution under a sterile laminar flow hood.
3. Remove the caps and using a sterile pipette, remove 26 mL of OpTmizer™ CTS™ T-Cell Expansion Supplement and add to 1 L of OpTmizer™ CTS™ T-Cell Expansion Basal Medium. Discard pipette.
4. Using a new sterile pipette, remove 10 mL of L-Glutamine solution and add to 1 L of OpTmizer™ CTS™ T-Cell Expansion Basal Medium. Discard pipette.
5. Replace the caps tightly and swirl gently to mix the complete OpTmizer™ CTS™ T-Cell Expansion SFM.
6. Medium can be further supplemented with cytokines and/or antibiotics if desired following the same steps 1–4 above.
7. Complete 1X OpTmizer™ CTS™ T-Cell Expansion SFM may be supplemented with cytokines such as IL-2 to support T-cell expansion. It is recommended to use 100–200 IU/mL of IL-2 for standard T cell expansion. The amount of IL-2 used may vary depending on experimental conditions.
8. If desired, antibiotics can be used. It is recommended to use Gentamicin at 10–50 µg/mL or Penicillin-Streptomycin.

Note: OpTmizer™ CTS™ T-Cell Expansion SFM is designed to support T-cell cultures without the addition of human serum. If required, 2% heat-inactivated human serum may be added to the medium to enhance viability and expansion. The use of serum, and the amount required, should be determined empirically depending on the specific T-cell culture application.

Complete OpTmizer™ CTS™ T-Cell Expansion SFM (basal medium with supplement, and L-glutamine) is stable for 4 weeks when stored in the dark at 2°C to 8°C.

Culture Conditions

Media: Complete OpTmizer™ CTS™ T-Cell Expansion SFM

Cells: Peripheral Blood Mononuclear Cells (PBMC)

Culture Type: Suspension

Culture Vessels: T-Flasks or WAVE Cellbag® Bioreactor

Temperature Range: 36°C to 38°C

Incubator Atmosphere: Humidified atmosphere of 5% CO_2 in air. Ensure proper gas exchange and minimize exposure of cultures to light.

Culture Procedure

Note: The procedure below serves as a general guideline for all static T-cell cultures, regardless of vessel. For high-density culture in bioreactors, such as WAVE Cellbag®, optimal procedures should be determined empirically by the investigator.

1. Prepare fresh peripheral blood mononuclear cells (PBMCs) or rapidly thaw (<1 minute) frozen vials of PBMCs cells in a 37°C water bath according to standard PBMC thawing protocols.
2. Wash cells with Dulbecco's Phosphate Buffered Saline (DPBS) without calcium and magnesium, with 5% heat-inactivated FBS or heat-inactivated human pooled Type AB serum according to the applications, if desired or required.
3. Determine total viable cell density and cell viability using Countess® Automated Cell Counter. Centrifuge cells at 200 × *g* for 5–10 minutes and remove wash buffer.
4. Resuspend PBMCs at 0.5–1 × 10^6 cells/mL in 1X complete OpTmizer™ CTS™ T-Cell Expansion SFM, supplemented with cytokines if used at culture initiation. Transfer the desired number of cells to the desired tissue culture vessel.

Note: A variety of protocols may be used for activating T-cells for subsequent expansion, including adding stimulatory antibodies or antigen presenting cells. Similarly, for either small or the large scale T-cell expansion, cells can be isolated, activated and expanded with Dynabeads® CD3/CD28 CTS™ according to instructions in the product insert.

5. Incubate the culture vessel at 37°C in a humidified atmosphere of 5% CO_2 in air.
6. Feed and maintain cells at desired concentrations while cells are in log phase growth. To maintain log phase growth, it may be preferable to split cells to achieve a density of 0.5–1 × 10^6 T-cells/mL whenever cell density gets above 1 × 10^6 cells/mL (e.g. 2 × 10^6 cells/mL would be split 1:4 to continue culture at 0.5 × 10^6 cells/mL).

Note: For optimal gas exchange in static plate cultures it is recommended that medium depth not exceed 1–1.2 cm.

Related Products

Product	Catalog No.
Dulbecco's Phosphate Buffered Saline CTS™, without calcium and magnesium	A12856
L-Glutamine, 200 mM (100X), liquid	25030
GlutaMAX™-I CTS™, 200 mL (100X), liquid	A12860
IL-2 (Interleukin 2) CTS™ Recombinant Human	CTP0021
IL-7 (Interleukin 7) CTS™ Recombinant Human	CTP0071
AB-Human Serum	34005
Certified FBS, Heat Inactivated, US	10082
Gentamicin Reagent Solution (50 mg/mL). liquid	15750
Penicillin-Streptomycin 100X Solution	15070
Countess® Automated Cell Counter	C10227
Dynabeads® CD3/CD28 CTS™	402-03D
DynaMag™ CTS™	121-02
Dynabeads® Human Treg Expander	111-29D

For additional information related to T-cell expansion using Life Technologies products refer to our website: **www.lifetechnologies.com/gibcocts**.

For information using Dynabeads® CD3/CD28 CTS™ (402-03D) refer to our website: **www.lifetechnologies.com/celltherapyresearchsupport**

Limited Use Label License

The purchase of this product conveys to the purchaser the limited, nontransferable right to use the purchased amount of the product only to perform internal research for the sole benefit of the purchaser. No right to resell this product or any of its components is conveyed expressly, by implication, or by estoppel. This product is for internal research purposes only and is not for use in commercial applications of any kind, including, without limitation, quality control and commercial services such as reporting the results of purchaser's activities for a fee or other form of consideration. For information on obtaining additional rights, please contact **outlicensing@lifetech.com** or Out Licensing, Life Technologies, 5791 Van Allen Way, Carlsbad, California 92008.

Limited Product Warranty

Life Technologies Corporation and/or its affiliate(s) warrant their products as set forth in the Life Technologies' General Terms and Conditions of Sale found on Life Technologies' website at **www.lifetechnologies.com/termsandconditions**. If you have any questions, please contact Life Technologies at **www.lifetechnologies.com/support**.

For additional technical information such as Safety Data Sheets (SDS), Certificates of Analysis, visit www.lifetechnologies.com/celltherapyresearchsupport. For further assistance, email techsupport@lifetech.com