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T-Store: Technical Information

Overview

T-STORE® (Tissue Store) is a chemically defined and optimised media developed to provide a stable storage and shipping environment for mammalian tissue samples and cells. The product has been designed to maintain the integrity of tissue samples, thereby reducing necrosis and apoptosis.

T-STORE® utilises a robust buffering system, allowing its use over a wide temperature range (+2°C to +37°C). In addition, it has been designed to be isosmotic, isotonic and isoionic with human serum and interstitial fluid, creating a homeostatic environment suitable for maintaining isolated tissues and cells for hours or days, as required.

Advantages of Using T-STORE®

- T-STORE® is a 'ready-to-use' transport and storage medium, suitable for collecting a wide range of cells and tissues.
- T-STORE® provides flexibility to highly time critical processes.
- T-STORE® can be used at sub-normothermic (non-frozen) and/or normothermic temperatures.
- T-STORE® offers stable pH-buffering of pH 7.15 - 8.20 for temperatures between +2°C to +37°C.
- T-STORE® can be used in aerobic or anaerobic conditions.
- T-STORE® is Xeno free i.e., free from serum and animal/human proteins.
- Endotoxin levels conform to EU standards (≤ 1.0 EU/mL) T-STORE® is solvent free i.e., free from DMSO.
- T-STORE® is aseptically produced and sterility tested.
- Available in a variety of standard bottle sizes, from 1 litre to 30mL.
- Product fully customisable into whatever collection containers are required.

Applications

- Storage and transport of tissue samples prior to analysis
- Storage of cells following dissociation/isolation or enrichment prior to further analysis
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T-STORE® mimics the basic composition of interstitial fluid meaning that the acid-base (pH) balance of tissues is maintained during storage and transportation, allowing tissues to be used successfully for up to 72 hours following removal. Storage in T-STORE® allows tissue samples to retain genetic and histological profiles for up to 72 hours.

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While other tissue preservation solutions are 'tissue-specific', T-STORE® can be used with various types of normal and malignant tissues and is ideal for storing and transporting 'fresh' samples for further processing.

Table 1. Benefits of using T-STORE® for tissue samples

Collection stage	Current Practices	T-STORE® Protocols
Collection and immediate holding	Biopsy delivered dry/soaked in saline/ wrapped in gauze/formalin fixed.	Biopsies can be simply immersed in requisite volume of T-STORE® at +2°C to +8°C.
Transportation	Snap frozen (SF), Formalin fixed (FFPE) processing or sent as fresh tissues. Long transport times may degrade fresh tissues.	Tissues can be maintained in TSTORE® over ice at 0°C to +4°C or room temperature (RT) for up to 72 hours before processing.
Processing	Fresh tissues may be utilised immediately otherwise availability is limited to SF or FFPE tissue samples	T-STORE® is suitable for use with a wide range of downstream analysis.
Analyses	Analytical choices are limited due to processing restrictions.	T-STORE® is suitable for wide range of tissues and analytical options.
Outcomes	Possibility of changes in molecular profiles within tissue samples.	T-STORE® retains the morphological and molecular structure of tissues.

Cell Support, Storage and Transportation

T-STORE® provides an ideal fluid composition to retain the acid-base balance and integrity of human cells *ex vivo*. The unique features of this formulation facilitate mitochondrial metabolism in the generation of adenosine triphosphate (ATP).

T-STORE® is suitable for a myriad of stem cell and peripheral blood cell types without the need for the addition of disruptive compounds and can be used 'cold' (hypothermic), sub-normothermic (+15°C to +25°C) and at normothermic temperatures. This product also has potential for use in cell culture bioreactors.

Presentation

T-STORE® is supplied as a ready-to-use solution. T-STORE® is also available with antibiotic: Amphotericin B and Chloramphenicol or Amphotericin B and Nanomycopulitin.

Table 2. T-STORE® is available in the following formats.

Product Code	Product Description	Pack Size
T-STORE-X	T-STORE® Tissue Storage and Transportation Medium	50mL, 125mL, 500mL, 1 L
T-STORE-B-AA	T-STORE® Tissue Storage and Transportation Medium with Antibiotic (Amphotericin B and Chloramphenicol)	100mL
T-STORE-B-AN	T-STORE® Tissue Storage and Transportation Medium with Antibiotic (Amphotericin B and Nanomycopulitin)	100mL
T-STORE-X-CUS	T-STORE® Tissue Storage and Transportation Medium with custom additives according to customer specification	Available on request

NOTE: 'X' in the product code denotes the pack size. Please state the pack size required at the time of ordering. Concentrations of antibiotic: Amphotericin B (5 µg/mL), Chloramphenicol (0.1 mg/mL), Nanomycopulitin (1X). T-Store containing antibiotic or other additives are not currently UK CA/CE marked.

Shelf Life

T-STORE® without antibiotics has a shelf life of 18 months from the date of manufacture when stored at +2 - 8°C under dark conditions. T-STORE® with added antibiotics has a shelf life of one month from the date of manufacture, when stored +2 - 8°C under dark conditions.

Storage

Recommended storage is +2°C to +8°C. Protect T-STORE® from exposure to light. Product ships at ambient temperature.

Registration

The standard formats of T-Store are registered as a medical device with MHRA. Any versions of T-Store containing antibiotic or other additives are not currently UK CA/CE marked.

Using T-STORE®

Cell storage at ambient temperature using T-STORE®

Prior to storage, cell lines should be cultured under recommended conditions.

1. Dissociate actively growing adherent cells or directly harvest suspension cells and calculate cell number and viability.
2. Pellet cells at 180 x g for 5 min at room temperature and discard the supernatant. Re-suspend the pellet in 3 mL of T-STORE® and re-pellet as before. Discard the supernatant.
3. Re-suspend the cell pellet in 2 mL of T-STORE, and transfer to a 2 mL cryo-tube (or equivalent).
4. Tubes can be stored in the dark at room temperature for up to 72 h. Robust cell types may be stored for up to 96 h.
5. To recover the cells, gently re-suspend them before transferring into an appropriate vessel, containing complete growth medium (there is no need to remove the T-STORE® prior to recovery). Incubate cells under optimal conditions (e.g. humidified, 5% CO_2 incubator at 37°C).
6. Full cell recovery should be seen within 48 h.

Procurement of Tissue Samples

T-STORE® is supplied to use neat without the need for further dilution. Additional antibiotic preparations are available, including Amphotericin B and Chloramphenicol and Amphotericin B and Nanomycopulitin. As the manufacturer, we are also able to supply T-STORE® with custom additives according to customer specifications. Please see Table 2 below for product presentation.

Following excision, tissue samples should be immediately completely submerged in T-STORE. The volume of T-STORE® required should be determined by the user, as the size of the sample and downstream applications may affect requirements. As a starting point for further optimisation, we recommend complete submersion in T-STORE® using a sterile, leak proof container with no headspace. It is recommended to use an excess volume of T-STORE® to tissue weight/size ratio to ensure successful storage.

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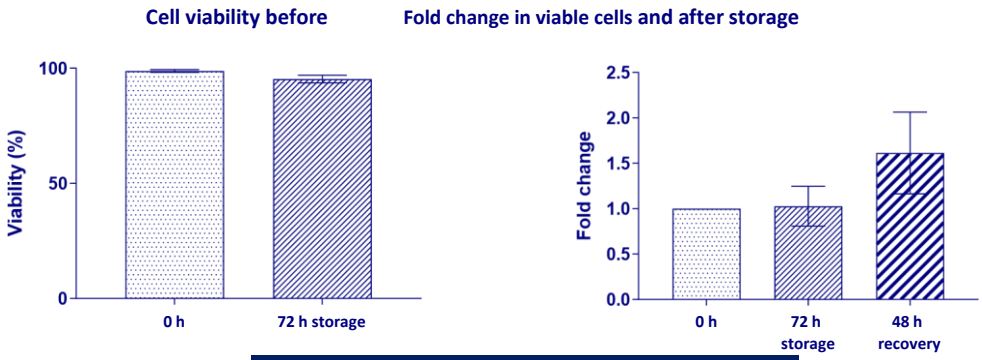
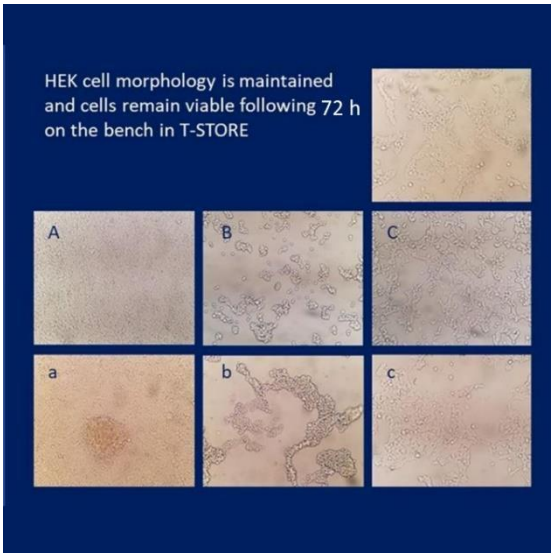
As part of the quality control process, each batch of T-STORE® undergoes functionality testing before release. The functionality test utilises HEK cells and the above protocol. Data shown have been collated from fourteen batches and show that cell numbers are maintained with excellent viability and recovery.





The cells were stored for 72 h in T-Store, then they were placed in T-Store (C,c), DMEM/HEPES (B,b), and DMEM complete media (A,a) for 96 h, and then growth and adhesiveness were compared to the top image. Original magnification 100X.

Support

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