Product sheet

CEM/C1 Cells | 305103

General information

Description	The CEM/C1 cell line is a derivative of the CCRF-CEM human T-cell leukemia cell line, specifically selected for its resistance to certain chemotherapeutic agents, notably the topoisomerase II inhibitor, doxorubicin. This selection confers the cell line with significant applications in the study of multidrug resistance, a prevalent challenge in the treatment of various cancers. The CEM/C1 line exhibits overexpression of the MDR1 gene, which encodes the P-glycoprotein, a key efflux transporter involved in the resistance of cells to chemotherapeutic drugs. Genetically, CEM/C1 cells are characterized by their human T-lymphoblastoid lineage, making them highly relevant for research into T-cell biology and leukemia. The cells maintain a robust proliferative capacity and can be used in in vitro experiments aimed at understanding the cellular mechanisms of drug resistance, apoptosis, and the efficacy of new chemotherapeutic agents. These cells also provide a valuable tool for pharmacological studies, particularly in evaluating the pharmacodynamics and pharmacokinetics of anticancer drugs within a controlled experimental setting. Due to their drug-resistant properties, CEM/C1 cells are particularly useful in the development of treatment strategies that circumvent or directly target mechanisms of drug resistance. Studies utilizing this cell line can contribute to the broader understanding of cancer cell survival tactics and potentially lead to the development of more effective cancer therapies, especially for refractory or relapsed T-cell leukemia.
Organism	Human
Tissue	Peripheral blood
Disease	T-cell acute lymphoblastic leukemia
Synonyms	CCRF-CEM C1, CEM-C1, CEM.C1, CEMC1

Characteristics

Age	4 years
Gender	Female
Morphology	Lymphoblast
Growth properties	Suspension

Identifiers / Biosafety / Citation

Citation	CEM/C1 (Cytion catalog number 305103)

CEM/C1 Cells | 305103

Biosafety level	1

Expression / Mutation

Handling

Culture Medium	RPMI 1640, w: 2.1 mM stable Glutamine, w: 2.0 g/L NaHCO3 (Cytion article number 820700a)
Medium supplements	Supplement the medium with 10% heat-inactivated FBS
Subculturing	Gently homogenize the cell suspension in the flask by pipetting up and down, then take a representative sample to determine the cell density per ml. Dilute the suspension to achieve a cell concentration of 1 x 10^5 cells/ml with fresh culture medium, and aliquot the adjusted suspension into new flasks for further cultivation.
Split ratio	1:2 to 1:4
Fluid renewal	2 to 3 times per week
Freeze medium	CM-1 (Cytion catalog number 800100)

Handling of cryopreserved cultures

1. Confirm that the vial remains deeply frozen upon delivery, as cells are shipped on dry ice to maintain optimal temperatures during transit.
2. Upon receipt, either store the cryovial immediately at temperatures below -150°C to ensure the preservation of cellular integrity, or proceed to step 3 if immediate culturing is required.
3. For immediate culturing, swiftly thaw the vial by immersing it in a 37°C water bath with clean water and an antimicrobial agent, agitating gently for 40-60 seconds until a small ice clump remains.
4. Perform all subsequent steps under sterile conditions in a flow hood, disinfecting the cryovial with 70% ethanol before opening.
5. Carefully open the disinfected vial and transfer the cell suspension into a 15 ml centrifuge tube containing 8 ml of room-temperature culture medium, mixing gently.
6. Centrifuge the mixture at 300 x g for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium.
7. Gently resuspend the cell pellet in 10 ml of fresh culture medium. For adherent cells, divide the suspension between two T25 culture flasks; for suspension cultures, transfer all the medium into one T25 flask to promote effective cell interaction and growth.
8. Adhere to established subculture protocols for continued growth and maintenance of the cell line, ensuring reliable experimental outcomes.

Quality control / Genetic profile / HLA

Sterility

Mycoplasma contamination is excluded using both PCR-based assays and luminescence-based mycoplasma detection methods.

To ensure there is no bacterial, fungal, or yeast contamination, cell cultures are subjected to daily visual inspections.