Product sheet

CCRF-CEM Cells | 300147

General information

Description	CCRF-CEM cells are a type of human T lymphoblasts commonly used in immuno-oncology and immunology research. These cells were isolated from the peripheral blood of a 4-year-old female Caucasian with acute lymphoblastic leukemia (ALL). CCRF-CEM grow in suspension and can reach high cell density when cultured in spinner flasks. Karyotype analysis of CCRF-CEM cells showed a modal number of 47 chromosomes, ranging from 41 to 95. They show no consistent loss or gain of specific chromosomes and no marker chromosomes. However, 28% of cells with 45 chromosomes showed C- and 53% of all cells had an extra D, and 35% had an additional F. CCRF-CEM cells are tumorigenic and can cause tumours in Syrian hamsters. These cells express CD3, CD5, CD7, and CD4 genes and antigens. Additionally, isoenzyme analysis showed ADA, 1; ES-D, 1; G6PD, B; GLO-I, 1; PEP-D, 1; PGD, C; PGM1, 1; PGM3, 0. These cells are reported to be free of virus particles as determined by electron microscopy. A study has shown that the combination of resveratrol and prednisolone induced apoptosis in CCRF-CEM cells in a time- and dose-dependent manner. The combination treatment showed synergistic effects on the overexpression of BAx and the downregulation of BCL2.
Organism	Human
Tissue	Peripheral blood
Disease	Leukemia
Synonyms	CCRF/CEM, CCRFCEM, CCRF.CEM, CCRF CEM, CCRF, CEM, CEM-CCRF, CEM-CCRF (CAMR), CCRF/CEM/0, CEM/0, CEM-0, CCRF-CEM/S, GM03671, GM03671C

Characteristics

Age	4 years
Gender	Female
Ethnicity	Caucasian
Morphology	Polymorph cells, big nuclei, formation of microvilli
Cell type	T lymphoblast
Growth properties	Suspension

Identifiers / Biosafety / Citation

Citation	CCRF-CEM (Cytion catalog number 300147)

Biosafety level	1

Expression / Mutation

Protein expression	p53 negative
Antigen expression	CD3 B (37%), CD4 (50%), CD5 (95%), CD7 (77%)
Isoenzymes	G6PD, B
Tumorigenic	Yes, in nude mice
Viruses	EBV negative
Reverse transcriptase	negative
Ploidy status	Aneuploid

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% FBS
Passaging solution	The utilization of a passaging solution is not necessary when passaging cells that are cultured in suspension. The appropriate procedure is to dilute the cells in accordance with the indicated guidelines.
Doubling time	24 hours
Subculturing	Subculture by diluting an appropriate volume of the cell suspension in a new flask containing fresh medium. Establish new cultures at 3 x 10^5 viable cells/ml. Upon thawing, culture in 1-2 T-25 cell culture flasks, incubate at 37 degree Celsius/5% CO2. Renew the medium 24 hr later by centrifuging and resuspending the cells in the same amount of fresh medium unless the cell concentration exceeds 2 x 10^6 cells/ml.
Seeding density	Start new cultures at 1 x 10^5 cells/ml

Fluid renewal	Every 3 days
Freezing recovery	After thawing, plate the cells at 5 x 10^4 cells/cm^2 and allow the cells to recover from the freezing process and to adhere for at least 24 to 48 hours.
Freeze medium	CM-1 (Cytion catalog number 800100) or CM-ACF (Cytion catalog number 806100)
Handling of cryopreserved cultures	CCRF-CEM cells are shipped in a deep-frozen state on dry ice. Upon receipt, confirm that the vial remains frozen. For storage, place the cryovial immediately at temperatures below -150 degrees. If you plan to culture the cells immediately, swiftly thaw the vial by shaking it in a 37 degrees water bath with clean water and an antimicrobial agent for 40-60 seconds. Remove the vial once a small ice clump persists, ensuring it remains cold. Proceed with all subsequent steps under aseptic conditions. In a sterile flow hood, disinfect the cryovial with 70% ethanol. Then, gently open the vial and transfer the cell suspension into a 15 ml centrifuge tube pre-filled with 8 ml of room temperature culture medium. Gently mix the cells. For cell separation, centrifuge at 300 x g for 3 minutes and dispose of the supernatant. Skipping centrifugation is optional, although any residual freezing medium should be removed after 24 hours. Resuspend the pellet gently in 10 ml of fresh culture medium and divide between two T25 culture flasks. Follow the subculture protocol for subsequent steps.
Handling of proliferating cultures	One or two cell culture flasks come filled with cell culture medium. Collect the entire medium in a 50 ml centrifuge tube. Spin down the collected medium at 300 x g for 3 minutes to collect the cells which may have detached during transit. If a cell pellet is visible, resuspend the cells in 5 ml of cell culture medium and transfer to a T25 cell culture flask. Carefully add 5 ml of cell culture medium to each T25 cell culture flask. Examine cell morphology and confluency using a microscope. Finally, incubate the flasks at 37 degrees Celsius for at least 24 hours.

Quality control / Genetic profile / HLA

Sterility	Mycoplasma contamination is rigorously 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.

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STR profile	**Amelogenin**: x,x **CSF1PO**: 10,13 **D13S317**: 11 **D16S539**: 10,13 **D5S818**: 12,13 **D7S820**: 9,13 **TH01**: 6,7 **TPOX**: 8 **vWA**: 17,19 **D3S1358**: 14,15 **D21S11**: 30,34.2 **D18S51**: 13,18 **Penta E**: 5,14 **Penta D**: 10,11 **D8S1179**: 12,13 **FGA**: 23,24
HLA alleles	**A***: 01:01:01, 07:01:02 **B***: 08:01:01, 16:01:02 **C***: 03:04:01, 07:01:01 **DRB1***: 03:01:01, 07:01:01 **DQA1***: 02:01:01, 05:01:01 **DQB1***: 02:01:01, 02:02:01 **DPB1***: 04:01:01, 13:xx