Caki-1

300149

GENERAL INFORMATION

Description

The Caki-1 cell line is derived from a metastatic site of a human renal clear cell carcinoma. Established from a tumor located in the wall of the renal vein of a male patient, Caki-1 cells are commonly used in the study of renal cancer biology, especially in understanding the mechanisms underlying clear cell renal cell carcinoma (ccRCC). This cell line is epithelial-like in morphology and exhibits robust in vitro growth characteristics, making it suitable for a variety of experimental techniques, including drug screening and molecular biology studies.
Caki-1 is particularly notable for its complex karyotype, characterized by a modal chromosome number of 68, with variations ranging from 63 to 71. This aneuploid chromosome configuration highlights a triploid range with certain abnormalities; notably, the Y chromosome is absent, which is not unusual in male-derived tumor cell lines. The cell line demonstrates several chromosomal aberrations, including multiple marker chromosomes and alterations in chromosomes N5, N9, N10, N16, and N19, contributing to its utility in cancer research.
In terms of tumorigenicity, Caki-1 is capable of forming tumors in nude mice and has been reported to consistently produce clear cell carcinoma, mirroring the pathology of the renal primary tumor. This characteristic makes it an invaluable model for in vivo studies of renal cancer metastasis and tumor biology. The cell line has also been observed to metastasize to the skin in experimental settings. From a biochemical perspective, Caki-1 expresses a variety of isoenzymes and antigens, including blood type O, Rh-, and HLA types A9, B12, Bw35. Isoenzyme profiling includes AK-1, ES-D, G6PD B, GLO-I, Me-2, PGM1, and PGM3, which may be relevant in studies of cellular metabolism and genetic expression related to cancer progression and response to treatments.

Tissue	Kidney
Disease	Clear cell carcinoma

Synonyms

- CAKI-1
- CaKi-1
- caki-1
- CAKI.1
- CAKI 1
- CAKI1
- Caki1

CLASSIFICATION

Organism	Human
Sex	Male
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial-like
Tumourigenic	Yes, in nude mice

IDENTIFIERS

Citation

Caki-1 (Cytion catalog number 300149)

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NCBI TaxID	9606
Cellosaurus	CVCL_0234

HANDLING AND CULTURE

Culture medium

EMEM (MEM Eagle), w: 2 mM L-Glutamine, w: 2.2 g/L NaHCO3, w: EBSS (Cytion article number 820100a)

Incubation atmosphere	37°C, 5% CO_2, humidified atmosphere.

Supplements

Supplement the medium with 10% FBS and 1% NEAA

Dissociation reagent	Accutase

Subculturing

Remove the old medium from the adherent cells and wash them with PBS that lacks calcium and magnesium. For T25 flasks, use 3-5 ml of PBS, and for T75 flasks, use 5-10 ml. Then, cover the cells completely with Accutase, using 1-2 ml for T25 flasks and 2.5 ml for T75 flasks. Let the cells incubate at room temperature for 8-10 minutes to detach them. After incubation, gently mix the cells with 10 ml of medium to resuspend them, then centrifuge at 300xg for 3 minutes. Discard the supernatant, resuspend the cells in fresh medium, and transfer them into new flasks that already contain fresh medium.

Seeding density	2 x 10^4 cells/cm^2 is recommended
Fluid renewal	2 to 3 times per week
Post-thaw 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 hours.

Thawing and culturing

Confirm that the vial remains deeply frozen upon delivery, as cells are shipped on dry ice to maintain optimal temperatures during transit.
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.
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.
Perform all subsequent steps under sterile conditions in a flow hood, disinfecting the cryovial with 70% ethanol before opening.
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.
Centrifuge the mixture at 300 x g for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium.
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.
Adhere to established subculture protocols for continued growth and maintenance of the cell line, ensuring reliable experimental outcomes.

QUALITY CONTROL AND CRYOPRESERVATION

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.

Freeze medium	As a cryopreservation medium, we use complete growth medium (including FBS) + 10% DMSO for adequate post-thaw viability, or CM-1 (Cytion catalog number 800100), which includes optimized osmoprotectants and metabolic stabilizers to enhance recovery and reduce cryo-induced stress.

Storage conditions

For long-term preservation, place vials in vapor-phase liquid nitrogen at about −150 to −196 °C. Storage at −80 °C is acceptable only as a short interim step before transfer to liquid nitrogen.

Shipping conditions

Cryopreserved cell lines are shipped on dry ice in validated, insulated packaging with sufficient refrigerant to maintain approximately −78 °C throughout transit. On receipt, inspect the container immediately and transfer vials without delay to appropriate storage.

DONOR

Donor age	49 years
Ethnicity	Caucasian

LEGAL AND SAFETY

Safety precautions

When planning to store a cryovial in liquid nitrogen for future thawing, it is mandatory to adhere to stringent safety measures. Appropriate protective gloves and clothing are essential, and the use of a face mask or safety goggles is required during the transfer of frozen samples to or from the liquid nitrogen tank. This is to mitigate the risk of injury from potential cryovial explosions upon removal, which can result in the projection of sharp fragments.

Warranty

At Cytion, we stand behind the quality and viability of our products.
We guarantee that our cells will be viable at the start of culture for
60 days after shipment from our facilities.
We assure that all materials conform to the specifications described in the
Certificate of Analysis and/or Product Sheet.
For full details, please refer to our
Warranty Statement.

Material Transfer Agreement required	Yes