Caki-2

300140

GENERAL INFORMATION

Description

Caki-2 is a human clear cell renal cell carcinoma (ccRCC) cell line that exhibits epithelial morphology and adheres during in vitro culture conditions. It serves as an essential preclinical model for the investigation of renal cancer mechanisms and therapeutic responses. The Caki-2 line is particularly notable for its resistance to certain chemotherapeutic agents; it displays decreased sensitivity to 5-fluorouracil and the multi-kinase inhibitor sorafenib, which targets VEGFRs 1-3, PDGFR-b, and Raf-1, in comparison to the Caki-1 cell line. This differential sensitivity is significant for studying drug resistance mechanisms and evaluating new therapeutic strategies in renal cell carcinoma.
The genetic background of Caki-2 cells includes a loss-of-function mutation in the von Hippel-Lindau (VHL) tumor suppressor protein, a hallmark of many ccRCCs that leads to the deregulation of hypoxia-inducible factors (HIFs) and contributes to tumorigenesis. The ability of Caki-2 cells to form tumors in immunocompromised mice makes them a valuable tool for in vivo studies of cancer growth and metastasis, providing insights into the tumor environment and potential therapeutic interventions. Their use extends to exploring the role of VHL in cancer progression and testing the efficacy of drugs targeting the HIF pathway and other associated signaling cascades in a controlled experimental setup.

Tissue	Kidney
Disease	Papillary carcinoma

Synonyms

- CAKI-2
- CaKi-2
- caki-2
- CAKI 2
- Caki 2
- Caki2
- CAKI2

CLASSIFICATION

Organism	Human
Sex	Male
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial-like. Ultrastructural features include microvilli and microfilaments. Few mitochondria, lysosomes or lipid droplets. Frequent multilamellar bodies. No virus particles.
Tumourigenic	Yes, in nude mice. Forms clear cell carcinoma

Karyotype

(P8) hypopentaploid to hypohexaploid (+A2, +A3, +B, +C, +D, +F, +G, -A) with abnormalities including dicentrics, acrocentric fragments, minutes, breaks, and large subtelocentric markers

IDENTIFIERS

Citation

Caki-2 (Cytion catalog number 300140)

NCBI TaxID	9606
Cellosaurus	CVCL_0235

EXPRESSION AND SUSCEPTIBILITY

Isoenzymes

Me-2, 1, PGM3, 1, PGM1, 1, ES-D, 1, AK-1, 1, GLO-1, 1-2, G6PD, B, Phenotype Frequency Product: 0.0511

HANDLING AND CULTURE

Culture medium

RPMI 1640, w: 2.0 mM stable Glutamine, w: 2.0 g/L NaHCO3 (Cytion article number 820700a)

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

Supplements

Supplement the medium with 10% FBS

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	1 x 10^4 cells/cm^2 will result in a 90% confluent monolayer in about 4 days
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	69 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

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