Product sheet

HK-2 Cells | 305021

General information

Description	The human kidney-2 (HK-2) cell line is a type of proximal tubular cell (PTC) derived from a normal human kidney. HK-2 cells were created by transfection with a recombinant retrovirus containing the human papillomavirus 16 (HPV-16) E6/E7 genes. This process led to the immortalization of the cells and the establishment of a continuously growing cell line. The HK-2 cells have been extensively characterized, and research has shown that they retain a phenotype indicative of well-differentiated PTCs. The cells express EGF and require it for their growth and survival. They are positive for various genes, including alkaline phosphatase, gamma glutamyltranspeptidase, leucine aminopeptidase, acid phosphatase, cytokeratin, alpha 3, beta 1 integrin, and fibronectin. Additionally, the cells retain functional characteristics of proximal tubular and are capable of gluconeogenesis. HK-2 cells are anchorage-dependent, which means that they require a surface to adhere to in order to grow. They cannot grow in methylcellulose, soft agar, or suspension. The cells have a mean diameter of 18.2 micrometer, and their doubling time ranges between 47.3 h and 61.7 h. In terms of applications, HK-2 cells have been widely used in toxicology research due to their ability to reproduce experimental results obtained with freshly isolated PTCs. For example, HK-2 cells have been used to study the effects of environmental toxins, such as cadmium and cisplatin, on kidney cells. The cells have also been used to study the mechanisms underlying kidney diseases such as diabetic nephropathy and acute kidney injury. However, it is essential to note that the susceptibility of HK-2 cells to toxic compounds can be affected by the number of passages. In conclusion, HK-2 cells are a well-characterized PTC cell line that can be used in a variety of biological research applications, particularly in toxicology. However, researchers should be aware of the potential effects of passaging on the susceptibility of these cells to toxic compounds, and the number of passages should be considered when interpreting experimental results.
Organism	Human
Tissue	Kidney, cortex, proximal tubule
Synonyms	Hk-2, HK2, Human Kidney-2

Characteristics

Age	Adult
Gender	Male
Ethnicity	European
Morphology	Epithelial
Growth properties	Adherent

Identifiers / Biosafety / Citation

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Citation	HK-2 (Cytion catalog number 305021)
Biosafety level	1

Expression / Mutation

Receptors expressed	Epidermal growth factor(EGF), expressed
Protein expression	Alkaline Phosphatase, Gamma Glutamyltranspeptidase, Leucine Aminopeptidase, Acid Phosphatase, Cytokeratin, Alpha 3, Beta 1 Integrin, Fibronectin

Handling

Culture Medium	DMEM:Ham's F12, w: 3.1 g/L Glucose, w: 1.6 mM L-Glutamine, w: 15 mM HEPES, w: 1.0 mM Sodium pyruvate, w: 1.2 g/L NaHCO3 (Cytion article number 820400a)
Medium supplements	Supplement the medium with 10% FBS, 10 microgram/L IGF-1, 10 microgram/L EGF, 1 mg/L Transferrin, 0.5 microgram/L TGF-b1, 0,2 mg/L Biotin 0.05 mg/ml BPE
Passaging solution	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.
Split ratio	1:2 to 1:4
Fluid renewal	2 to 3 times per week
Freeze medium	CM-1 (Cytion catalog number 800100) or CM-ACF (Cytion catalog number 806100)

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. Optionally, skip centrifugation but remove any remaining freezing medium after 24 hours.
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.

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STR profile

Amelogenin: x,x
CSF1PO: 13
D13S317: 9
D16S539: 11,12
D5S818: 12
D7S820: 10,11
TH01: 9
TPOX: 8,9
vWA: 17,18
D3S1358: 16,17
D21S11: 28,30
D18S51: 12
Penta E: 10,11
Penta D: 9,12
D8S1179: 10,14
FGA: 20,22
D1S1656: 12,13
D6S1043: 12,13
D2S1338: 17,25
D12S391: 17.3,22
D19S433: 15,15.2