Product sheet

HK-2 | 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

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
Medium supplements	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 medium and rinse the adherent cells using PBS without calcium and magnesium (3-5 ml PBS for T25, 5-10 ml for T75 cell culture flasks). Add Accutase (1-2 ml per T25, 2.5 ml per T75 cell culture flask), the cell sheet must be covered completely. Incubate at ambient temperature for 8-10 minutes. Carefully resuspend the cells with medium (10 ml), centrifuge for 3 min at 300 g, resuspend cells in fresh medium and dispense into new flasks which 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	The cells come deep-frozen shipped on dry ice. Please make sure that the vial is still frozen. If immediate culturing is not intended, the cryovial must be stored below -150 degree Celsius after arrival. If immediate culturing is intended, please follow the below instructions: Quickly thaw by rapid agitation in a 37 degree Celsius water bath within 40-60 seconds. The water bath should have clean water containing an antimicrobial agent. As soon as the sample has thawed, remove the cryovial from the water bath. A small ice clump should still remain and the vial should still be cold. From now on, all operations should be carried out under aseptic conditions. Transfer the cryovial to a sterile flow cabinet and wipe with 70% alcohol. Carefully open the vial and transfer the cell suspension into a 15 ml centrifuge tube containing 8 ml of culture medium (room temperature). Resuspend the cells carefully. Centrifuge at 300 x g for 3 min and discard the supernatant. The centrifugation step may be omitted, but in this case the remains of the freeze medium have to be removed 24 hours later. Resuspend the cells carefully in 10 ml fresh cell culture medium and transfer them into two T25 cell culture flasks. All further steps are described in the subculture section.
Handling of proliferating cultures	One or two cell culture flasks come filled with cell culture medium. Collect the entire medium in 1 or 2 x 50 ml centrifuge tubes, respectively. Carefully add 5 ml of cell culture medium to each T25 cell culture flask. Control the cell morphology and confluency under the microscope. Incubate at 37 degree Celsius for a minimum of 24 hours. 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. Incubate at 37 degree Celsius for a minimum of 24 hours.

Quality control / Genetic profile / HLA

Sterility	Mycoplasma contaminations are ruled out through PCR-based and luminescence-based mycoplasma assays. The absence of bacterial, fungal or yeast contamination is controlled through daily visual cell monitoring.
STR profile	**Amelogenin**: 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