MKN1

305589

GENERAL INFORMATION

Description

MKN1 is a human gastric cancer cell line derived from an adult patient with poorly differentiated adenocarcinoma. This cell line is widely used in cancer research due to its relevance in modeling gastric cancer progression, invasion, and response to therapies. It exhibits a mesenchymal-like morphology, indicative of epithelial-to-mesenchymal transition (EMT), a process critical in cancer metastasis. The MKN1 cell line is notable for its moderate to low expression of key proteins like RhoA, making it an essential tool in studying signaling pathways linked to cell adhesion and motility.

Recent research highlights the importance of MKN1 in exploring the role of DCLK1 (Doublecortin-like kinase 1), a putative cancer stem cell marker, in gastric cancer. Overexpression of DCLK1 in MKN1 cells promotes EMT and enhances the secretion of small extracellular vesicles (sEVs), which are implicated in cell migration and tumor microenvironment remodeling. Proteomic analysis of sEVs from DCLK1-overexpressing MKN1 cells has identified significant alterations in proteins involved in migration and adhesion, such as STRAP and BCAM. Furthermore, DCLK1's kinase activity appears to regulate the selection of cargo proteins within these vesicles, underscoring its potential as a therapeutic target.

Additionally, studies involving the RHOA mutation (R129W) in MKN1 cells have revealed its role in altering cell migration and adhesion pathways, independent of CDH1 mutations. Functional assays show that the mutation results in a higher active GTP-bound state of RhoA, linking it to enhanced cell motility. These findings position MKN1 as a robust model for dissecting genetic and molecular mechanisms underlying gastric cancer pathogenesis and testing potential therapeutic interventions.

Tissue	Stomach
Disease	Adenosquamous carcinoma
Metastatic site	Lymph node

Synonyms

- MKN-1
- MKN 1

CLASSIFICATION

Organism	Human
Sex	Male
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial-like

IDENTIFIERS

Citation

MKN1 (Cytion catalog number 305589)

NCBI TaxID	9606
Cellosaurus	CVCL_1415

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EXPRESSION AND SUSCEPTIBILITY

Mutational profile

Mutation: TP53, p.Val143Ala (c.428T>C)

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 TrypLE Express, 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.

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	72 years
Ethnicity	Japanese

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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