KMH-2

305142

GENERAL INFORMATION

Description

KMH-2 is a human anaplastic thyroid carcinoma (ATC) cell line derived from a male patient with a rapidly progressing and fatal form of thyroid cancer. Anaplastic thyroid carcinoma is one of the most aggressive and lethal thyroid malignancies, characterized by its rapid growth and resistance to conventional therapies. KMH-2 cells were established from a biopsy of the primary tumor before the patient underwent any chemotherapy or radiotherapy. These cells are highly relevant for studying the pathophysiology of ATC, as well as for testing the efficacy of new therapeutic agents.

The KMH-2 cell line exhibits a spindle-shaped morphology when cultured in vitro, which is typical of many anaplastic thyroid carcinoma cells. These cells have shown resistance to multiple chemotherapeutic agents, including cisplatin, doxorubicin, etoposide, and pepleomycin, reflecting the clinical challenge of treating ATC. The chemoresistance in KMH-2 cells has been attributed to the expression of multidrug resistance-associated protein (MRP) mRNA, although they do not express the mdr-1 and mdr-3 mRNAs associated with P-glycoprotein, suggesting that their drug resistance mechanism is independent of P-glycoprotein. This resistance to chemotherapy makes KMH-2 a valuable model for investigating alternative treatment strategies.

In terms of growth characteristics, KMH-2 cells have relatively long doubling times, and their tumorigenicity has been confirmed in xenotransplantation models using athymic nude mice. However, these cells required specific conditions to enhance proliferation in vivo, such as the use of a tiny plastic plate to facilitate growth post-inoculation. Chromosomal analysis of KMH-2 has revealed multiple abnormalities, a common feature in aggressive cancers, which further underscores their utility in studying the genetic underpinnings of anaplastic thyroid carcinoma.

Tissue	Thyroid
Disease	Thyroid gland anaplastic carcinoma
Metastatic site	Pleural effusion

Synonyms

- KMHDASH2
- KMH2

CLASSIFICATION

Organism	Human
Sex	Male
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Morphology	Spindle shaped cells with giant cells
Doubling time	58 hours

IDENTIFIERS

Citation

KMH-2 (Cytion catalog number 305142)

NCBI TaxID	9606

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Cellosaurus	CVCL_S641

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.

Fluid renewal	2 to 3 times per week

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	71 years
Ethnicity	Asian

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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