KHYG-1

305890

GENERAL INFORMATION

Description

KHYG-1 is a human natural killer (NK) cell leukemia cell line established from the peripheral blood of an adult female patient diagnosed with aggressive NK-cell leukemia. The cell line was derived at initial diagnosis and represents an Epstein-Barr virus (EBV)-negative NK-cell malignancy, distinguishing it from many NK/T-cell lymphoma models that are EBV-associated. KHYG-1 cells grow in suspension and display the cytomorphologic and immunophenotypic characteristics of activated NK cells, including expression of CD56 and cytoplasmic CD3ε, while lacking surface CD3 and T-cell receptor gene rearrangements, consistent with true NK-cell lineage derivation.
Molecular profiling studies have included KHYG-1 in genomic and transcriptomic analyses of NK-cell malignancies. Array comparative genomic hybridization and gene expression studies across NK-cell lines have identified recurrent chromosomal abnormalities in NK-cell tumors, such as deletions involving 6q21 and alterations affecting tumor suppressor pathways. In contrast to several EBV-positive NK-cell lines, KHYG-1 does not harbor detectable ATR gene alterations in analyses of the full coding region, underscoring molecular heterogeneity within NK-cell neoplasms. Gene expression profiling places KHYG-1 within the NK-cell lineage cluster, characterized by expression of NK-associated receptors and cytotoxic effector molecules, and distinct from cytotoxic αβ and γδ T-cell lymphomas.
Functionally, KHYG-1 exhibits interleukin-2-dependent proliferation in vitro and retains cytotoxic activity typical of NK cells. The line has been widely used to investigate signaling pathways critical to NK-cell survival and proliferation, including aurora kinase A and NOTCH pathway components, as well as to evaluate candidate therapeutic inhibitors targeting NK-cell malignancies. As an EBV-negative model of aggressive NK-cell leukemia, KHYG-1 provides a valuable in vitro system for studying intrinsic oncogenic mechanisms in NK-cell transformation, independent of viral-driven lymphomagenesis.

Tissue	Peripheral blood
Disease	Natural killer cell lymphoblastic leukemia/lymphoma

Synonyms

- KHYG1
- KHYG

CLASSIFICATION

Organism	Human
Sex	Female
Biosafety level	1

CHARACTERISTICS

Morphology	lymphocyte-like
Doubling time	24-48 hours ; ~30-40 hours ; ~54 hours , ~30 hours , ~25 hours

IDENTIFIERS

Citation

KHYG-1 (Cytion catalog number 305890)

NCBI TaxID	9606
Cellosaurus	CVCL_2976

EXPRESSION AND SUSCEPTIBILITY

Mutational profile

Mutation: p.Gly12Ala, Unspecified; Mutation: p.Arg248Trp, Unspecified

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% heat-inactivated FBS and 10 ng/ml IL-2

Dissociation reagent	None
Split ratio	Split 1/4 every 3-4 days.
Fluid renewal	Simple dilution because of suspension cell culture. Subculture every 3-4 days with split ratio = 1/4.

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 200 x g for 5 minutes, carefully discard the supernatant containing freezing medium.
Follow the procedure described under Post-Thaw Recovery

QUALITY CONTROL AND CRYOPRESERVATION

Freeze medium	As a cryopreservation medium, we use complete growth medium + 10% DMSO for adequate post-thaw viability.

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	45 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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