

MIN-6 Cells | 302148

General information

Description

The MIN-6 cell line is a murine pancreatic beta cell line derived from insulinoma. It is commonly used in research to study insulin secretion mechanisms and beta-cell function due to its ability to synthesize and secrete insulin in response to glucose levels. This cell line is particularly valuable because it retains many of the functional characteristics of primary pancreatic beta cells, making it a useful model for diabetes research.

MIN-6 cells exhibit glucose-responsive insulin secretion, which is a critical trait for studies focusing on the regulation of insulin release and the cellular responses to varying glucose concentrations. The cells are also used to investigate pancreatic beta-cell proliferation and apoptosis, as well as the role of various genes and environmental factors in these processes. Additionally, MIN-6 cells have been instrumental in testing potential pharmacological agents for their effects on beta-cell function and survival, thus contributing to the development of new therapeutic strategies for diabetes.

Organism Mouse

Tissue Pancreas, islets of Langerhans

Disease Mouse insulinoma

Synonyms Min6, MIN6, Mouse INsulinoma 6

Characteristics

Breed/Subspecies C57BL/6 IT6 transgenic

Age 13 weeks

Gender Unspecified

Cell type Beta cell

Growth properties Adherent

Regulatory Data

Citation MIN-6 (Cytion catalog number 302148)

Biosafety level 1

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NCBI_TaxID 10090**CellosaurusAccession** CVCL_0431**GMO Status** GMO-S1: This murine pancreatic β -cell line (MIN-6) contains an SV40 T-Antigen transgene under insulin promoter control from a transgenic mouse model, supporting immortalization and insulin-related studies. The construct is stably integrated. This classification applies only within Germany and may differ elsewhere.**Biomolecular Data****Protein expression** Insulin, glucagon, somatostatin, ghrelin**Viruses** Transformant: Simian virus 40 (SV40)**Handling****Culture Medium** DMEM, w: 4.5 g/L Glucose, w: 4 mM L-Glutamine, w: 3.7 g/L NaHCO₃, w: 1.0 mM Sodium pyruvate (Cytion article number 820300a)**Supplements** Supplement the medium with 15% heat-inactivated FBS, 50 μ M beta-Mercaptoethanol.**Dissociation Reagent** Accutase**Subculturing** Discard the old medium and wash the cells with PBS. Add a freshly prepared 0.025% trypsin/0.02% EDTA solution heated to 37 degrees Celsius and wait until the cells detach, which usually takes about 5 minutes. Neutralize the trypsin by adding fresh medium, then transfer the cell mixture to a tube and centrifuge. After centrifugation, remove the supernatant, resuspend the cell pellet in fresh culture medium, and transfer the suspension to new flasks.**Seeding density** 5×10^4 cells/cm²**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.

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Thawing and Culturing Cells

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 $300 \times g$ for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium.
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.

Incubation Atmosphere

37°C , 5% CO_2 , humidified atmosphere.

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.

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.

Quality Control & Molecular Analysis

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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.