Human Mesenchymal Stem Cells, Whartons Jelly (HMSC-WJ)

300685

GENERAL INFORMATION

Description

Human Mesenchymal Stem Cells derived from Wharton's Jelly (HMSC-WJ) represent a unique and versatile subset of mesenchymal stromal cells (MSCs). These cells are isolated from the gelatinous substance within the umbilical cord, offering a more primitive source of MSCs compared to those derived from adult tissues like bone marrow or adipose tissue. This primitive nature contributes to their higher proliferation rates, lower immunogenicity, and enhanced differentiation potential. Notably, HMSC-WJ can differentiate into a wide variety of cell types, including adipocytes, osteoblasts, and chondrocytes, under specific in vitro conditions, making them highly valuable for research into regenerative medicine, tissue engineering, and cellular therapies.
One of the key differentiators of HMSC-WJ from other MSCs is their non-invasive and ethically favorable source, as the umbilical cord is typically discarded after birth. This eliminates the ethical concerns and donor morbidity associated with harvesting MSCs from bone marrow or adipose tissue. Furthermore, HMSC-WJ demonstrate superior immunomodulatory properties and a lower risk of transformation compared to MSCs from other sources, making them an attractive option for both in vitro studies and potential therapeutic applications.
The cultured HMSC-WJ are cryopreserved at early passages using a specific cryomedium to ensure high viability and functionality upon thawing. Each cryovial contains a minimum of 1 x 10^6 cells, with viability levels consistently ranging between 92% to 95% as determined by the Trypan Blue dye exclusion test. These cells are collected from healthy donors, all of whom have provided informed consent for the use of their cell material. Rigorous quality control measures are applied to each batch of HMSC-WJ, ensuring that they meet strict criteria for identification, purity, potency, and viability, thereby guaranteeing their appropriateness for research purposes.

Tissue	Umbilical Cord - Whartons Jelly

CLASSIFICATION

Organism	Human
Growth properties	Adherent
Biosafety level	1

IDENTIFIERS

Citation

Human Mesenchymal Stem Cells, Whartons Jelly (HMSC-WJ) (Cytion catalog number 300685)

NCBI TaxID	9606

HANDLING AND CULTURE

Culture medium

Alpha MEM, w: 2.0 mM stable Glutamine, w/o: Ribonucleosides, w/o: Deoxyribonucleosides, w: 1.0 mM Sodium pyruvate, w: 2.2g/L NaHCO3

Incubation atmosphere	37°C, 5% CO_2, humidified atmosphere.

Supplements

Supplement the medium with 10% FBS, 2 ng/mL bFGF

Dissociation reagent	Accutase

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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.

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 80% FBS + 10% basal medium + 10% DMSO to maintain viability, or CM-1 (Cytion catalog number 800100) for superior cryoprotection, preventing unwanted differentiation while preserving pluripotency.

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.

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