HiMedia CellCulture
Enabling Breakthroughs

Product Information

HiMesoXL™ Mesenchymal Stem Cell Expansion Medium

Product Code: AL512

Product description:

HiMesoXL™ Mesenchymal Stem Cell Expansion Medium is designed for in vitro cultivation and expansion of Human Wharton's Jelly Mesenchymal Stem Cells (HWJ-MSC), Human Adipose Derived Mesenchymal Stem Cells (HAD-MSC) and Human Dental Pulp Stem Cells (HDP-SC) while maintaining them in an undifferentiated state. This medium is a proprietary formulation containing inorganic and organic salts, amino acids, vitamins, growth factors, nutrients and sodium bicarbonate. It does not contain antibiotics and antimycotics.

Products Required But Not Supplied

1. Media Supplements	Code
Mesenchymal Stem Cell Tested Fetal Bovine Serum (FBS)	RM10832, RM10845 RM10846, RM10938
Antibiotic-Antimycotic Solution 100X [or] Gentamicin-Amphotericin B solution 1000X	A002 A031
2.Reagents for Sub-culture	**Code**
Dulbecco's Phosphate Buffered Saline (DPBS)	TL1006
Trypsin/EDTA Solution 1X	TCL007
Trypan Blue 0.5% solution	TCL005
Trypsin inhibitor from soyabean	TCL068
3. Stem Cell Freezing Medium	**Code**
CryoXL™ Stem Cell Freezing Medium	TCL107

Directions:

1. Disinfect the external surface of the bottles of AL512 and FBS by spraying with isopropyl alcohol before placing in a bisafety hood.
2. Aseptically add FBS in AL512 in an amount equal to 10% of the total volume of complete medium.
   E.g. For 100ml medium, add 11ml FBS
   For 500ml medium, add 55ml FBS.
   If desired, 1.1ml of antibiotic-antimycotic solution (A002) can be added to 100ml of complete medium. OR 5.5ml of antibiotic-antimycotic solution (A002) can be added to 500ml of complete medium
3. Tightly cap the bottle and swirl gently to ensure proper mixing.
   ***Note**: Do not mix vigorously. Doing so will cause formation of foam.*
4. Store the complete medium at 2 - 8ºC until use.

Quality control:

Appearance
Orangish red coloured clear solution
pH
7.00-7.60
Osmolality in mOsm/Kg H_2O
290.00-330.00
Sterility
No bacterial or fungal growth is observed after 14 days of incubation, as per USP specification.
Cultural Response
The medium is tested for optimal cell growth and proliferation of mesenchymal stem cells.

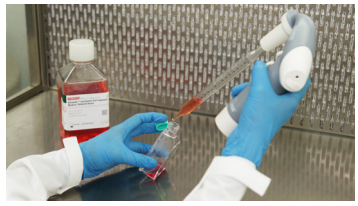
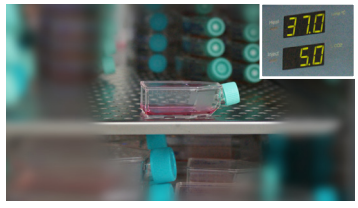
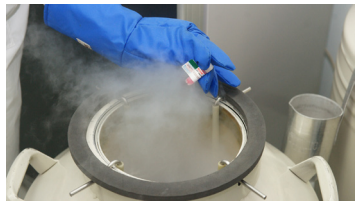
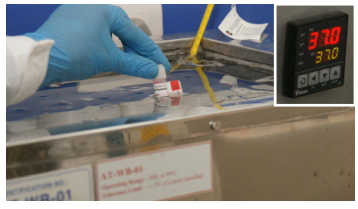
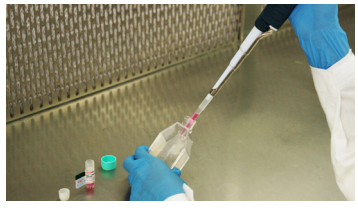
Storage and shelf life:

Store at 2-8ºC away from bright light.

Note: Once complete medium has been formulated, store it at 2-8°C until use. Avoid extended exposure of complete medium to room temperature or higher tempera tures. Complete medium should be equilibrated at room temperature before adding to cells. Freezing of the medium is not recommended.

Table 1: Protocol for thawing

- Cryopreserved cells are supplied in liquid nitrogen dry vapour shipper (-150°C to -130°C).
- Upon receipt, immediately transfer the vial to the vapor phase of liquid nitrogen tank.
- Store it in the tank until further use. Cells must be processed at least in a BSL II hood.

		Key Points to Remember	Time Required (approx.)
1. Preparation of Culture Vessel			
a. Add 5ml of complete medium to a T-25 flask		**Preparation of complete medium AL512 (500 ml) + FBS (55ml) + A002 (5.5 ml)**	60 secs
b. Place the flask at 37°C to equilibrate the medium			30 mins
2. Thawing Procedure		**Make sure water bath is set at 37°C before starting the thawing procedure**	
a. Remove cryovial from the liquid nitrogen tank/ shipper wearing appropriate protective gear		**Thawing should be AS FAST AS POSSIBLE to minimize cell damage**	
b. Immediately thaw the vial partially by holding in a water bath at 37°C		**DO NOT hold the vial in water bath for more than 90-120 secs** **AVOID getting water upto the cap of the vial**	90-120 secs
c. Disinfect the vial by swabbing thoroughly with 70% isopropyl alcohol			10 secs
d. Add the cell suspension drop by drop to the T-25 flask containing the pre-warmed complete medium. Keep swirling the flask while adding the cell suspension		**Dropwise addition is required to prevent the cells from stress induced by exothermic reaction**	30-60 secs

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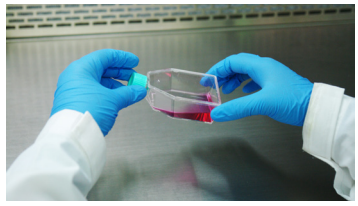
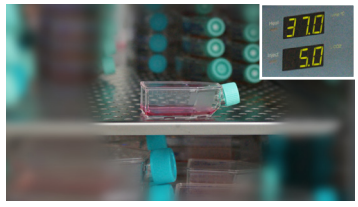
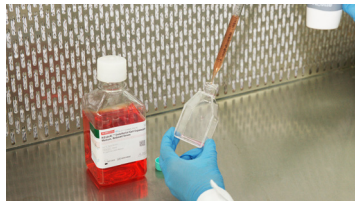
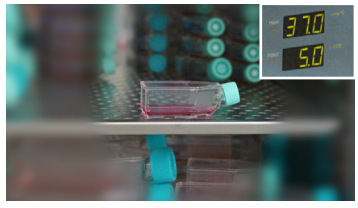
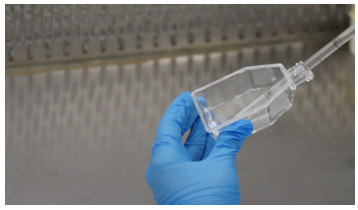
		Key Points to Remember	Time Required (approx.)
e. Cap the flask and shake gently to ensure proper mixing and uniform distribution of cells in the medium			10 secs
3. Incubation			
a. Incubate the cells at 37°C and 5% CO_2		**Check for cell attachment in 2-3 hrs**	2-3 hrs
b. If more than 70-80% cells are attached, replace the medium with fresh medium		**Medium change after 2-3 hours is mandatory to remove traces of DMSO** **If cells have not attached, centrifuge the cell suspension at 1000 rpm for 7-8 mins and resuspend in fresh medium**	60-120 secs 7-8 min
c. Incubate the cells at 37°C and 5% CO_2			3-5 days
YOUR CELLS ARE READY TO SUB-CULTURE			
4. Maintenance			
a. Monitor the cells every day b. Change the medium every alternate day c. Sub-culture, once cells reach 70 - 80% confluence		**Use the recommended freezing medium for cryopreservation of cells** **DO NOT allow cells to reach 100% confluency before sub culture or cryopreservation** **In case of reduced serum or serum free media , use trypsin inhibitor solution (TCL068) for neutralisation of Trypsin during subculture** **Usage of just medium for neutralisation will result in inefficient neutralisation and will stress the cells resulting in reduced viability and cell death**	

Table 2 : Sub-culture

- HWJ-MSC/HAD-MSC/HDP-SC can be sub-cultured at a seeding density of 5000-10,000 cells/cm^2.
- Sub-culturing ratios can vary from 1:2 - 1:5
- A confluent T-25 flask of HWJ-MSC/HAD-MSC/HDP-SC yields 1.0 x 10^6 cells

		Key Points to Remember	Time Required (approx.)
a. Aspirate entire medium and discard DO NOT disturb the monolayer			60 secs
b. Wash the cells with 2-3 ml DPBS to remove residual medium c. Aspirate off the DPBS and discard		**Prior to use, make sure that Trypsin-EDTA solution is equilibrated to room temperature**	60 secs
d. Add 0.5 ml pre-warmed Trypsin-EDTA solution		**Gently rock the flask to ensure complete coverage of the Trypsin-EDTA solution over the cells**	
e. Incubate the flask in the incubator at 37°C for 30-60 secs		**Exposing the cells to Trypsin-EDTA for longer time leads to loss of cell viability**	30-60 secs
f. Microscopically monitor the flask. g. When the cells start rounding up, gently tap the flask to ensure complete detachment of cells			15 secs
h. To neutralize action of trypsin add 3 ml of complete medium, if AL512 is used i. Pipette gently to get a homogenous mixture of cells j. If reduced serum medium AL519 is used, add 0.5 ml Soyabean Trypsin Inhibitor Solution (TCL068). Centrifuge the cell suspension at 1000 rpm for 10 mins. Discard supernatant and resuspend pellet in fresh 3 ml of complete medium by pipetting.		**Vigorous pipetting will stress the cells**	60 secs

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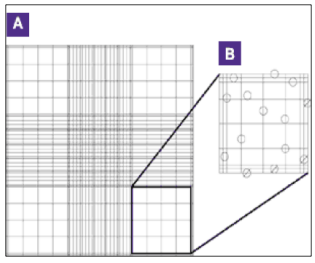
		Key Points to Remember	Time Required (approx.)
k. Count cells using hemocytometer l. Seed at recommended seeding density in a new flask containing fresh complete medium Refer to Table Û		**DO NOT refrigerate cells after splitting** **Seed immediately**	10-15 mins
m. Incubate in a humidified incubator at 37°C and 5% CO_2			48 hrs
Maintenance			
a. Monitor the cells every day b. Change the medium every alternate day c. Sub-culture once cells reach 70 - 80% confluence			

Table 3 : Seeding Density

Flask	Recommended Seeding Density	No. of Cells Per Flask	Volume of Medium (ml)
T-25	5000 cells/cm^2	0.125 x 10^6	5 - 7
	10,000 cells/cm^2	0.25 x 10^6	5 - 7

These are recommended seeding densities from literature and our studies. Higher seeding densities do not cause any harm to the cells and reduce the required population doublings per passage. Lower seeding densities may cause cells to lose viability, detach during culture and in general take more population doublings to reach confluence.

Related products:

Product Name	Code	Packing
HiFi™ Wharton's Jelly Derived Mesenchymal Stem cells (HWJ-MSC)	CL001-0.5 CL001-T25 CL001-T75	0.5 million cells/vial 1 T25cm^2 flask 1 T75cm^2 flask
HiFi™ Adipose Derived Mesenchymal Stem cells (HAD-MSC)	CL007-0.5 CL007-T25 CL007-T75	0.5 million cells/vial 1 T25cm^2 flask 1 T75cm^2 flask
HiFi™ Human Dental Pulp Stem cells (H-DPSC)	CL008-0.5 CL008-T25 CL008-T75	0.5 million cells/vial 1 T25cm^2 flask 1 T75cm^2 flask
HiMesoXL™ Mesenchymal Stem Cell Expansion Medium, Reduced serum	AL519-1X100ML AL519-1X500ML	1x100ml 1x500ml
HiAdipoXL™ Adipocyte Differentiation Medium	AL521-1X100ML	1x100ml
HiOsteoXL™ Osteocyte Differentiation Medium	AL522-1X100ML	1x100ml
HiChondroXL™ Chondrocyte Differentiation Medium	AL523-1X100ML	1x100ml
EZXpand™ Mesenchymal Stem Cell Culture Kit (Adipose-derived)	CCK024-0.5 CCK024-T25	0.5 million cells/vial 1 T25cm^2 flask
EZXpand™ Mesenchymal Stem Cell Culture Kit (Wharton's Jelly derived)	CCK025-0.5 CCK025-T25	0.5 million cells/vial 1 T25cm^2 flask
CryoXL™ Stem Cell Freezing Medium	TCL107-1X50ML	1x50ml
Accutase™	TCL075-1X100ML TCL075-5X100ML TCL075-1X500ML	1 x 100ml 5 x 100ml 1 x 500ml
Trypsin-EDTA Solution 1X	TCL033-5X100ML TCL033-2X500ML TCL033-6X500ML	5 x 100ml 2 x 500ml 6 x 500ml
Trypsin Inhibitor from soybean 1X; Liquid	TCL068-1X100ML TCL068-5X100ML	1 x 100ml 5 x 100ml
Dulbecco's Phosphate Buffered Saline	TL1006-5X100ML TL1006-2X500ML TL1006-6X500ML TL1006-18X500ML TL1006-1X1000ML	5 x 100ml 2 x 500ml 6 x 500ml 18 x 500ml 1 x 1000ml
Antibiotic Antimycotic solution 100X, Liquid	A002-5X20ML A002-5X50ML A002-5X100ML	5 x 20ml 5 x 50ml 5 x 100ml
Gentamicin Solution w/ 50mg/ml Gentamicin in sterile tissue culture grade water	A005-5X20ML A005-5X50ML	5 x 20ml 5 x 50ml
Gentamicin Amphotericin B Solution 1000X w/ 30mg/ml Gentamicin and 25µg/ml Amphotericin B in sterile cell culture grade water	A031-1X20ML A031-5X20ML	1 x 20ml 1 x 50ml

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