

User Manual

OriCell™ Adipogenic Differentiation Medium For Human Related Stem Cells

Catalog No. HUXXC-90031



Introduction

OriCell™ Adipogenic Differentiation Medium For Human Related Stem Cells, carefully developed by the OriCell™ R&D team, contains a basic medium suitable for the growth of human related mesenchymal stem cells, OriCell™ Premium Fetal Bovine Serum and various additives required for inducing cell differentiation.

This product is suitable for adipogenic induction and differentiation of Human related mesenchymal stem cells, such as dental pulp stem cells, urine-derived stem cells, and umbilical cord blood stem cells. Extensive cell culture data demonstrate that this product can induce these cells to differentiate efficiently and stably into adipocytes.

Note: This product is only provided for further scientific research. It is not intended for diagnostic, therapeutic, clinical, household, or any other applications.

When citing our products in academic journals, please indicate “OriCell™ + Catalog Number, from Cyagen Biosciences (Guangzhou) Inc.”

Product Information

Components of Solution A	Catalog Number	Volume
OriCell™ Basal Medium For Cell Culture	BLDM-03011	177 mL
OriCell™ Fetal Bovine Serum (Superior-Quality)	FBSSR-01021	20 mL
OriCell™ Supplements For Human Related Stem Cells Adipogenic Differentiation A-I	HUXXC-04031-a1	3 mL
OriCell™ Supplements For Human Related Stem Cells Adipogenic Differentiation A-II	HUXXC-04031-a2	200 µL

Components of Solution B	Catalog Number	Volume
OriCell™ Basal Medium For Cell Culture	BLDM-03011	90 mL
OriCell™ Fetal Bovine Serum (Superior-Quality)	FBSSR-01021	10 mL
OriCell™ Supplements For Human Related Stem Cells Adipogenic Differentiation B	HUXXC-04031-b	200 µL

Other Components	Catalog Number	Volume
Oil Red O Solution (pH=2.0~2.2)	OILR-10001	5 mL
Gelatin	GLT-11301	10 mL

QC

- Pass the detection of bacteria, fungi, mycoplasma and endotoxins.
- Pass the detection of osmotic pressure and pH.
- Pass the detection of product quality.

Please reference "COA" for details.

General Handling Principles

1. Ensure that all equipment is kept clean and tidy.
2. Standard operation method. Please operate according to the method described in the product manual.
3. The ingredients should be properly stored in accordance with the storage conditions and used as soon as possible.

4. If complete medium cannot be used in a short period of time, it should be prepared in batches according to the volume ratio of each component in the kit and stored in aliquots.

Product Stability and Storage Conditions

1. All ingredients must be kept in dark place.
2. The basal medium should be stored in a refrigerator at 4 °C for a period of 1 year. Other components should be stored at -20°C for a period of 2 years.
3. The prepared complete medium can be stored at 4 °C for a period of 1 month. If the culture conditions are stable, the container has great sealing performance, and there is no alternation of hot and cold condition, the period of using can be appropriately extended, but not exceed 45 days.
4. Please use all products within the expiration date. Expired ingredients may significantly affect the cell culture effect.

Preparation of Complete Medium

Materials Required

- OriCell™ Adipogenic Differentiation Medium For Human Related Stem Cells (Cat. No.: HUXXC-90031)
- Clean, sterile, and stable quality disposable consumables (pipettes, pipette tips, centrifuge tubes, etc.)
- Clean sealing film
- Aluminum foil paper and other light-avoiding materials

Steps

Preparation of Solution A

1. At least 6 hours before preparation, place the OriCell™ Premium Fetal Bovine Serum (Cat. No.: FBSSR-01021) in a refrigerator at 4°C to allow it thaw completely.

Note: There may be floccules in the thawed serum, the main component of which is fibrin, which will not affect the product performance. If the required purity of the cell culture system is not extremely high, we do not recommend filtration or centrifugation removing flocs.

2. At least 30 minutes before preparation, place OriCell™ Supplements For Human Related Stem Cells Adipogenic Differentiation A-I in a refrigerator at 4°C. OriCell™ Supplements For Human Related Stem Cells Adipogenic Differentiation A-II is placed at room temperature until completely thawed.

Note: After the melted additive A-II appears granular precipitation, it is a normal phenomenon. It can be re-dissolved by pipetting repeatedly after a short 37°C water bath.

3. Turn upside down or flick the reagent tube to mix the reagent.
4. Centrifuge the additive A-II reagent tube briefly to ensure that the reagent is concentrated at the bottom of the tube for collection.
5. Use 75% ethanol to carefully wipe the outer packaging of all ingredients. Open the package in the clean bench.
6. Add all the serum, supplement A-I, and supplement A-II to OriCell™ Basal Medium (Cat. No.: BLDM-03011).

Note: In order to ensure a good dissolution effect, please preheat the basic medium to 37°C, otherwise the additive A-II may precipitate out when cold.

7. Take a small amount of basal medium, wash each bottle and tube, and add all the ingredients to the basal medium as much as possible.
8. Tighten the cap of the basal medium bottle, shake gently and thoroughly.
9. Seal the mouth of the bottle with parafilm, wrap the bottle with aluminum foil, and mark the name, preparation date and other information.

Preparation of Solution B

1. At least 6 hours before preparation, put the OriCell™ Premium Fetal Bovine Serum (Cat. No.: FBSSR-01021) in a refrigerator at 4°C to allow it thaw completely.
2. At least 30 minutes before preparation, place OriCell™ Supplements For Human Related Stem Cells Adipogenic Differentiation B in a refrigerator at 4°C until it is completely thawed.
3. Turn upside to down or flick the reagent tube to mix the reagent.
4. Centrifuge the reagent tube of Additive B briefly to ensure that the reagents are concentrated at the bottom of the tube for easy collection.
5. Use 75% medical alcohol to carefully wipe the outer packaging of all ingredients. Open the package in the clean bench.
6. Add all the serum and supplement B to OriCell™ Basal Medium (Cat. No.: BLDM-03011).
7. Take a little amount of basal medium, wash each bottle and tube, and add all the ingredients to the basal medium as much as possible.
8. Tighten the cap of the basal medium bottle and shake it gently and thoroughly.
9. Seal the bottle with parafilm, wrap the bottle with aluminum foil paper, and mark the name, preparation date and other information.

Special Reminder

- If complete medium will not be used immediately, we recommend to preparing in batches. Please prepare the required amount according to the ratio of each component in the kit, but the remaining components must be stored in accordance with their respective storage conditions and not be frozen and thawed multiple times.
- All components in the OriCell™ Adipogenic Differentiation Medium For Human Related Stem Cells are strictly aseptically controlled. Under normal circumstances, we do not recommend sterilization again. If there is a risk of contamination during the preparation process, the complete medium can be filtered and sterilized.
- The prepared adipogenic differentiation medium should be aliquoted into small portions to avoid repeated freeze-thaw cycles.

Procedure for Inducing Differentiation

Materials Required

- OriCell™ Adipogenic Differentiation Medium For Human Related Stem Cells (Cat. No.: HUXXC-90031)
- OriCell™ 0.1% Gelatin Solution (Cat. No.: GLT-11301)
- OriCell™ Phosphate-Buffered Saline Solution (1X) (Cat. No.: PBS-10001)

Steps

Note:

- 1) This operating procedure takes a six-well plate as an example, please choose a suitable culture container according to the actual situation.
 - 2) In order to reduce the cells floating and not sticking to the wall during the induction process, it is recommended to use gelatin to coat the culture container.
 - 3) The induction medium needs to be preheated to 37°C before use.
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1. Add 1 mL of 0.1% gelatin solution to the six-well plate and shake it to make it evenly cover the bottom of each well.
 2. Place the six-well plate covered with 0.1% gelatin solution on the ultra clean bench or CO₂ incubator for at least 30 minutes.
 3. After 30 minutes, suck off the gelatin to inoculate cells, or wait for the six-well plate to dry before inoculation.
 4. Inoculate the adipose-derived mesenchymal stem cells to be induced in a six-well plate at a cell density of 2×10^4 cells/cm², and add 2 mL of ordinary complete medium to each well.
 5. The cells are cultured in a CO₂ incubator at 37°C, 5% CO₂, and saturated humidity.
 6. When the cell confluence reaches 100%, carefully aspirate the complete medium in the well, and add 2 mL of medium A solution to the six-well plate.
 7. After 3 days of induction, aspirate solution A in the six-well plate and add 2 mL solution B.

8. After maintaining for 1 day, aspirate solution B and switch to solution A for induction.
9. Solution A and solution B are used alternately, during which the cell status needs to be observed every day. If the cells shrink or die during the induction of solution A, please change to solution B in time until the cell state is restored.

Note:

- 1) Solution A stimulates the formation of lipid droplets. Solution B maintains the formed lipid droplets and promotes the increase of lipid droplets.
 - 2) Under normal circumstances, the use of "A solution for 3 days, B solution for 1 day" can smoothly induce cell adipogenesis.
 - 3) Various conditions may occur during the induction process of various types and batches of cells. Please adjust the ratio of A and B solution use flexibly.
10. Repeat the induction and maintenance process until there are enough lipid droplets of suitable size, ready for dyeing.

Oil Red O Staining Analysis

Materials Required

- OriCell™ Phosphate-Buffered Saline Solution (1X) (Cat. No.: PBS-10001)
- 4% Paraformaldehyde solution or 10% Formalin solution
- OriCell™ Oil Red O Solution (Cat.No.: OILR-10001)

Steps

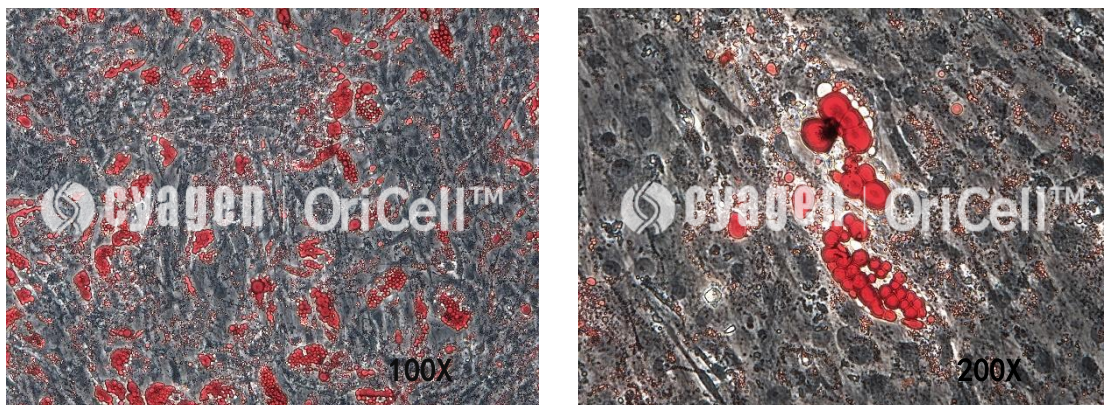
Note: To prevent lipid droplets from detaching, handle all steps as gently as possible.

1. After the adipogenic induction and differentiation, aspirate the complete adipogenic differentiation medium in the six-well plate, and wash gently with 1×PBS for 2 to 3 times.
2. Add 2 mL of 4% paraformaldehyde solution (or 10% formalin) to each well, fix for 30 min at room

temperature.

3. Prepare the working solution by mixing OriCell™ Oil Red O Solution and distilled water at a ratio of 3:2. After thorough mixing, centrifuge the solution at $250 \times g$ for 4 minutes, and use the supernatant for staining.
4. Aspirate the fixative and wash gently with $1\times$ PBS for 2 to 3 times to ensure that the fixative is thoroughly washed.
5. Add 2 mL of working solution to each well and dye for 30 min at room temperature.
6. Aspirate the working solution, and gently wash with $1\times$ PBS for 2 to 3 times to fully wash off the staining solution.
7. Add 2 mL $1\times$ PBS to each well, and place the culture plate under a microscope to observe the lipid forming staining effect.
8. After dyeing, the six-well plate is sealed with parafilm and stored at 4°C , but not more than 1 week. The lipid droplets will fuse with each other and cannot maintain the state they were in when they were dyed.

The Effect of Oil Red O Solution Staining



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