Stem SFM 01

Version 1.0

Product Description

Stem SFM 01 stem cell culture medium and its supplements (Stem cell supplement1 and Stem cell supplement2) are free of hydrolysates, serum, and any xenogeneic animal-derived components, suitable for the adherent culture of stem cells from multiple sources. Stem cell supplement1 contains a trace amount of serum substitute.

Product	Catalog No.	Volume	Glucose	Growth Factor	Description
Stem SFM 01	11903-25018	500 mL	2.0 g/L	With	To be used with 3% Stem cell supplement1 or 4% serum/serum substitute
Stem cell supplement1	99215-25021	15 mL	Without	With	Supplement for Stem SFM 01 (contains serum substitute)

Table 1. Stem Cell Culture Media Containing Serum Substitute

Product	Catalog No.	Volume	Glucose	Growth Factor	Description
Stem SFM 01	11903-25018	500 mL	2.0 g/L	With	To be used with 3% Stem cell supplement2 or 4% serum/serum substitute
Stem cell supplement2	99216-25022	15 mL	Without	With	With growth factors

Table 2. Stem Cell Culture Media Containing Growth Factors

Transportation and Storage

Transportation

Maintain at below −20 °C or ship using an appropriate cold-chain method.

Storage

Stem Cell Supplement1 and 2 (liquid form): Store at 2~8 °C protected from light for up to 2 months;

Stem Cell Supplement1 and 2 (liquid form): Store at -20 °C or below for up to 2 years;

Stem SFM 01 (liquid form): Store at 2~8 °C for up to 12 months.

Instructions

Thawing

Thaw in a 37 °C water bath. Repeated freeze-thaw cycles are prohibited, as they may cause insoluble substances.

Culture Volume

Recommended volume for T25 flask: 7.5~10 mL;
Recommended volume for T75 flask: 15~25 mL;
Recommended volume for T175 flask: 25~40 mL.

Cell Passage

The recommended seeding density is 4,000~10,000 cells/cm². Enzymatic dissociation and cell passage can be performed when cell confluence reaches 80% or higher.

Cell Dissociation

1. Prewarm dissociation reagent and culture medium in a 37 °C water bath.
2. Aspirate and discard used culture medium.
3. Wash cells with 5 mL calcium- and magnesium-free DPBS; aspirate and discard residual medium.
4. Add an appropriate volume of recombinant trypsin solution sufficient to cover the cell monolayer.
5. Incubate at 37 °C and monitor under a microscope. Proceed when cells visibly retract and morphological changes at the vessel surface are observed, or when gentle tapping of the flask releases cells into suspension.
6. Add 5–10 mL of prewarmed complete medium to

terminate the dissociation; transfer the cell suspension into a 15 mL centrifuge tube.

7. Centrifuge at 300–500 × *g* for 5–10 minutes. Discard supernatant and resuspend the pellet in fresh prewarmed medium. Count cells and determine viability.

8. Continue subsequent procedures according to standard protocols appropriate for the cell type.

Precautions

1. Avoid repeated freeze-thaw of the supplements; thaw in a 37 °C water bath;

2. It is recommended to use up the products within 2 months when stored at 2~8 °C.

Case Study

1. Cell Growth

When culturing adipose-derived stem cells, Stem SFM 01 supplemented with only 1.5% fetal bovine serum produced cell morphology (Figure 1) and density (Figure 2) comparable to alpha-MEM supplemented with high concentrations of serum substitute, significantly reducing serum dependence and improving cost-effectiveness.

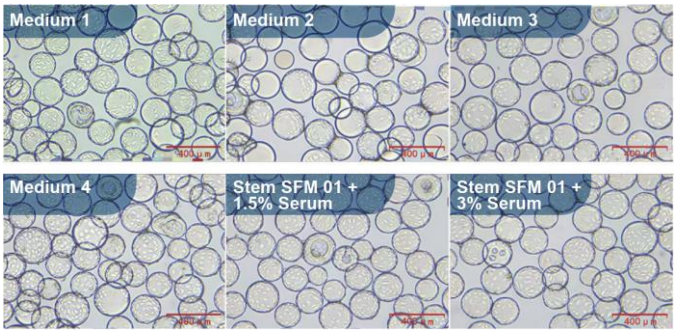

Figure 1. Morphology of adipose-derived stem cells on microcarriers.

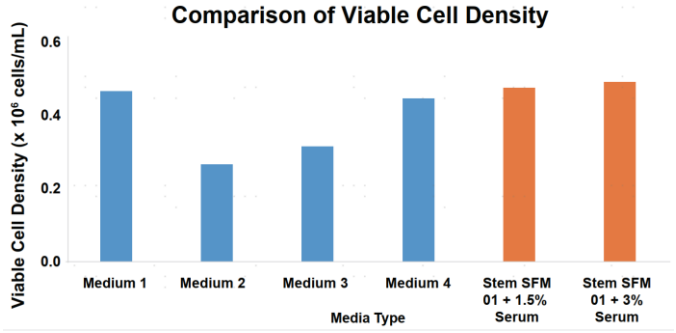

Figure 2. Comparison of viable cell densities of adipose derived stem cells.

2. Surface Marker Analysis

Stem SFM 01 can support mesenchymal stem cells (MSCs) to achieve a higher expansion fold and cell yield while maintaining robust stemness.

Days	Total Cell Count (×10⁶)	
	Control	Stem SFM 01
Day 0	0.15	0.15
Day 3	0.95	1.38
Passage 8 Expansion Fold (P8)	6.31	9.21
Day 0	0.15	0.15
Day 3	1.07	1.54
Passage 9 Expansion Fold (P9)	7.12	10.25

Table 1. Comparison of Cell Expansion Folds

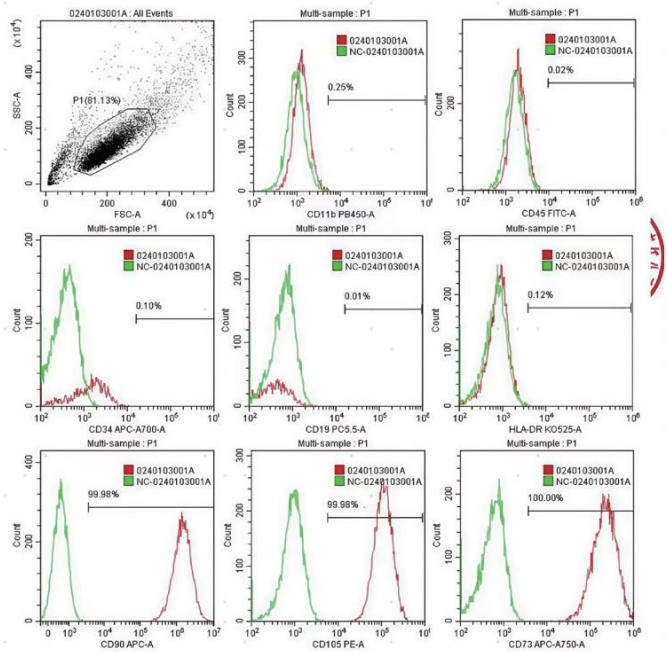

Figure 3. Positive marker expression exceeded 99% (CD73/CD90/CD105), while negative marker expression (CD34/CD45/HLA-DR) remained below 1%.

3. Exosome Production

Mesenchymal stem cells cultured in Stem SFM 01 demonstrate significantly higher exosome yield than control groups, with stable and reliable quality.

Parameter	Value
Total Cell Count	One cell factory, 3.5 × 10^8
Supernatant Volume	1 L
TFF1	40 mL
Molecular Sieve Volume	~40 mL
TFF2	N/A
Content Detection (particles/mL)	5.6 × 10^{10}
Yield per Liter	2.24 × 10^{12}

Table 2. The exosome yield of Stem SFM 01 medium is 2.24×10^{12} particles/L, higher than that of an MNC medium (2-5×10^{11} particles/L).

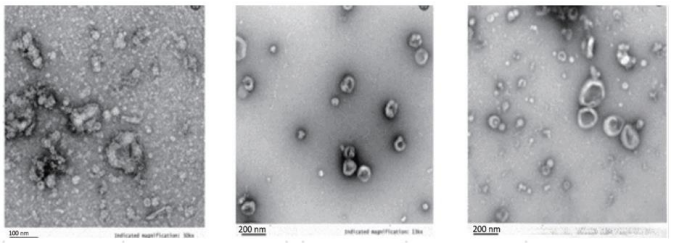

Figure 4. Comparison of exosome native solutions: exosomes produced in Stem SFM 01 exhibited superior productivity, along with uniform vesicle morphology and distinct structural features, indicating that Stem SFM 01 efficiently supports stem cells in secreting high-quality exosomes.