SFM4CHO-Utility

HYCLONE MEDIA AND SUPPLEMENTS

HyClone™ SFM4CHO-Utility is a versatile cell culture medium designed to support the growth of multiple Chinese hamster ovary (CHO) cell clones and production of a variety of recombinant proteins. The medium enables excellent growth of many CHO cells with minimal adaptation.

SFM4CHO-Utility medium is well-suited for cost-effective manufacture of recombinant proteins for academic and industrial research, genomics and proteomics, *in vitro* diagnostics, drug target screening and validation, and manufacturing of preclinical lots.

SFM4CHO-Utility medium has been designed to support the dihydrofolate reductase (DHFR) selection/amplification system. The medium has been successfully tested in a variety of cell culture systems, including T-flasks, spinner flasks and bioreactors. SFM4CHO-Utility is available in liquid and powder formats in user-friendly packaging (Fig 1).

Key features of SFM4CHO-Utility medium include

- Designed for high cell yield and recombinant protein production
- Supports multiple CHO clones
- Allows for direct or sequential adaptation
- Supports growth in multiple cell culture systems
- Manufactured from traceable components according to cGMP guidelines

Specifications

- Liquid medium contains poloxamer 188
- Does not contain phenol red
- Liquid medium contains L-glutamine
- Powder medium does not contain L-glutamine

Product handling

Store medium at 2°C to 8°C, away from light. In addition, powder medium should be stored protected from moisture in a tightly sealed container.

Fig 1. SFM4CHO-Utility medium is available as liquid or powder in pack sizes suitable for small-volume cell culture as well as large-scale bioprocessing applications.

Suggested preparation

Reconstitution of SFM4CHO-Utility powder medium

SFM4CHO-Utility medium is a two-part powder comprising base and main powder.

1. While stirring, add base powder to cell culture-grade water at 90% of final preparation volume (9.8 g/L). If your water source is normally cool, it can be useful to adjust the water temperature. Using warmer room temperature water (22°C to 25°C) will improve solubilization time. Mix for 20 min or until dissolved.
2. After base powder has dissolved, add main powder to vessel (6.0 g/L). Mix until dissolved.
3. Add 1.0 g/L poloxamer 188 and 2.2 g/L sodium bicarbonate according to Table 1. Mix until dissolved.
4. Bring vessel to final volume with cell culture-grade water. Allow solution to mix for 20 min.
5. Check pH and osmolality. Expected values:
   - pH 7.4 to 7.8
   - Osmolality 295 to 335 mOsm/kg
6. Sterile filter into desired container using a 0.2 µm sterile filter.

Preparation note

SFM4CHO-Utility powder medium does not contain L-glutamine. Recommended concentration: 6 mM.

Table 1. Sodium bicarbonate supplementation guide

CO_2 environment	Sodium bicarbonate level
Online pH control	0.25 g/L
5% CO_2 incubator	2.20 g/L
10% CO_2 incubator	3.60 g/L

Note: Additional buffering can be achieved by adding 5 to 25 mM HEPES.

General culture recommendations

1. Cultures should be incubated at 37°C in a 5% CO_2 environment.
2. Maintain adapted cells by establishing a mid-logarithmic growth phase subculturing schedule.
3. Suggested seeding density of cultures: 2.0 ×10^5 cells/mL; viability should be > 90%.

Direct adaptation

1. Transfer cells grown in current medium directly into SFM4CHO-Utility medium at 2.0 × 10^5 cells/mL.
2. When viable cell density reaches 1.0 to 1.5 × 10^6 cells/mL, subculture the cells.
3. Cells should be subcultured every 48 to 96 h.
4. If cell viability drops below 80%, proceed to sequential adaptation.

Sequential adaptation

Dilute serum-containing medium with an equal volume of SFM4CHO-Utility medium. This preparation will be referred to as the sequential adaptation medium (SAM). Prepare twice the volume of medium needed for the culture vessel in use (i.e., for a T-75 flask using 25 mL of medium, prepare 50 mL of SAM). Prior to each subculture, warm medium to 37°C.

1. Subculture the cells into SAM at a seeding concentration of 2.0 × 10^5 cells/mL. For best results, the culture should be ~ 70% confluent.
2. When the cells reach a density of 1.0 to 1.5 × 10^6 cells/mL, subculture into an equal mixture of SAM and fresh SFM4CHO-Utility medium at a seeding density of 2.0 × 10^5 cells/mL.

Cryopreservation

SFM4CHO-Utility medium adapted cells can be cryopreserved in a medium consisting of a 1:1 ratio of fresh and conditioned SFM4CHO-Utility medium. To this, add DMSO to a final concentration of 7.5%.

Quality control testing

Quality control test specifications are listed in Table 2.

Table 2. Test specifications[1]

Appearance	Clear solution
Osmolality	295 to 335 mOsm/kg
pH	7.4 to 7.8
Sterility	No growth (bacteria or fungi)
Endotoxin	< 10.0 EU/mL[1]
Application	Growth promotion[1]

[1] Refer to certificate of analysis for actual results.

Custom production

Formulations and delivery systems can be customized to your specific process requirements or optimized to maximize process yields.

Rapid Response Production (RRP)

Our RRP program manufactures up to 200 L of your custom prototype formulation within seven working days of your request. Use our RRP service to expedite the development and testing of custom buffers and process liquids for your biopharmaceutical manufacturing process.

Related products

Table 3 gives an overview of HyClone supplements.

HyClone Cell Boost kit

Cell Boost™ Process Supplements (100 g each) contain samples of supplements designed to increase cell productivity in a variety of cell lines. Each supplement is developed through the Metabolic Pathway Design process and is chemically defined and protein-free with no animal derived components.

HyClone LS250 supplement

LS250 is a chemically defined, animal-derived component-free lipid supplement developed to stimulate cell growth and monoclonal antibody (MAb) production in NS0 cell cultures using traditional hybridoma serum-free media.

HyClone LS1000 supplement

LS1000 supplement is a chemically defined, animal-derived component-free lipid supplement developed to stimulate cell growth and MAb production in NS0 cell cultures using traditional hybridoma serum-free media.

The supplement is formulated using a proprietary complexing process for enhanced cholesterol delivery. LS1000 has been successfully tested in a variety of serum-free medium cultures, including HyClone CDM4NS0 and CDM4MAb media.

Table 3. Supplement matrix

	Amino acids	Vitamins	Glucose	Trace elements	Growth factors	Hypoxanthine/ thymidine	ADCF* lipids	ADCF* cholesterol	Suitable for	Code number
Cell Boost 1 Supplement (R05.2)	•	•	•						HEK293 CHO	SH30584
Cell Boost 2 Supplement (R15.4)	•		•						PER.C6™ CHO	SH30596
Cell Boost 3 Supplement (JM3.5)	•	•	•	•		•			Hybridoma Myeloma	SH30825
Cell Boost 4 Supplement (PS307)	•	•	•	•	•		•	•	CHO	SH30857
Cell Boost 5 Supplement (CN-F)	•	•	•	•	•	•	•	•	Hybridoma NS0 HEK293 CHO	SH30865
Cell Boost 6 Supplement (CN-T)	•	•	•	•	•	•	•	•	T-Cells Hybridoma NS0 HEK293 CHO	SH30866
LS250 supplement							•	•	NS0	SH30554
LS1000 supplement								•	NS0	SH30555

* Animal-derived component-free

Ordering information

Product	Size	Code number
HyClone SFM4CHO-Utility liquid medium With L-glutamine	500 mL bottle	SH30516.01
	1000 mL bottle	SH30516.02
	5 L bag	SH30516.03
	10 L bag	SH30516.04
	20 L bag	SH30516.05
	50 L bag	SH30516.06
	100 L bag	SH30516.07
	200 L bag	SH30516.08
	500 L bag	SH30516.09
HyClone SFM4CHO-Utility powder medium Without L-glutamine	1 × 10 L*	SH30517.02
	1 × 50 L*	SH30517.03
	1 × 100 L*	SH30517.04
	1 × 500 L†	SH30517.05
	1 × 1000 L†	SH30517.06

Related products	Size	Code number
HyClone Cell Boost kit	6 × 100 g	SH30890
HyClone LS1000 cholesterol supplement	50 mL bottle	SH30554.01
	100 mL bottle	SH30554.02
	500 mL bottle	SH30554.03
	1000 mL bottle	SH30554.04
HyClone LS250 lipid supplement	100 mL bottle	SH30555.01
	500 mL bottle	SH30555.02
	1000 mL bottle	SH30555.03

* High-density polyethylene (HDPE) bottle
† Polybag/pail

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For local office contact information, visit cytiva.com/contact

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