SFM4MAb

HYCLONE MEDIA AND SUPPLEMENTS

HyClone™ SFM4MAb medium is developed to increase the process yields for the industrial manufacture of recombinant antibodies and antibody fragments for therapeutic use. SFM4MAb has been optimized using our Metabolic Pathway Design process (see box) in a variety of engineered hybridoma and recombinant myeloma cell lines.

SFM4MAb is a low protein formulation and is optimized for downstream purification using protein A, protein G, and other matrices to facilitate product recovery. The medium is formulated using our proprietary lipid and phospholipid complexing process for enhanced stability and growth promotion of various cell types. SFM4MAb is available in liquid and powder formats in user-friendly packaging (Fig 1).

Key features of SFM4MAb medium include

- Designed for high cell yield and antibody production
- Complexed lipids for enhanced stability
- Allow for direct or sequential adaptation
- Optimized for protein A, protein G, and other purification matrices
- Manufactured according to cGMP guidelines

Specifications

- Contains poloxamer 188
- Available with and without L-glutamine

Product handling

SFM4MAb liquid and powder media should be stored 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. SFM4MAb medium is available as liquid or powder in pack sizes suitable for small-volume cell culture as well as large-scale bioprocessing applications.

Metabolic Pathway Design process

An optimal cell culture process is dependent on a variety of factors including the parental cell line, the genetic makeup of the specific clone, medium and feed composition, as well as process variables to maximize viable cell densities and titers while maintaining cell morphology. Our experts in medium design and development know and understand how these factors can influence the metabolic processes involved. They evaluate the culture's metabolic activities, measuring nutritional demand and waste creation to make sure the correct type and quantity of nutrients are used to minimize waste and resultant cell toxicity. Our experts use their understanding of metabolic pathways to optimize medium composition for enhanced productivity and viable cell densities. Once a medium has been optimized using this Metabolic Pathway Design process, our scientists can help you devise the most effective cell culture strategy using a combination of medium and feeds to further enrich productivity and reduce process inefficiencies.

Suggested preparation

Reconstitution of SFM4MAb powder medium

1. While stirring, add SFM4MAb powder medium to cell culture-grade water at 90% of final preparation volume (18.62 g/L). Mix until dissolved.
2. Add 2.3 g/L sodium bicarbonate. Mix until dissolved.
3. Bring vessel to final volume with cell culture-grade water. Allow solution to mix for 10 to 20 min.
4. Check pH and osmolality. Expected values:
   - pH 7.0 to 7.4
   - Osmolality 290 to 320 mOsm/kg
5. Sterile filter into desired container using a 0.2 µm sterile filter.

Preparation notes

SFM4MAb powder medium does not contain L-glutamine. Recommended concentration: 6 mM.

General culture recommendations

1. Cultures should be incubated at 37°C in a 5% CO_2 environment.
2. The caps on culture flasks should be loosened and adequate vessel headspace should be given to provide gas exchange.
3. Seeding densities should be ~ 2.5 × 10^5 cells/mL. Higher densities (e.g., 5.0 × 10^5 cells/mL) can facilitate quicker adaptation.

Direct adaptation

1. Transfer cells grown in current medium directly into SFM4MAb medium at 5.0 × 10^5 cells/mL.
2. When viable cell density reaches 2.0 to 4.0 × 10^6 cells/mL, subculture the cells.
3. Cells should be subcultured every 72 to 96 h.
4. If cell viability drops below 80%, proceed to sequential adaptation.

Sequential adaptation

1. Transfer cells grown in current medium into SFM4MAb medium at a ratio of 1:1 using a seeding density of 5.0 × 10^5 cells/mL.
2. Incubate culture until two population doublings are observed. Subculture cells by mixing equal volumes of cell suspension in conditioned medium and fresh SFM4MAb medium (1:1 ratio).
3. Continue to subculture the cells using this method until the previously used medium is reduced below 0.05% concentration and cell viability is > 85%.

Cryopreservation

SFM4MAb medium adapted cells can be cryopreserved in a medium consisting of a 1:1 ratio of fresh and conditioned SFM4MAb. To this, add DMSO to a final concentration of 7.5%.

Table 1. Test specifications[1]

Appearance	Clear solution
Osmolality	290 to 320 mOsm/kg
pH	7.0 to 7.4
Sterility	No growth (bacteria or fungi)
Endotoxin	< 10.0 EU/mL[1]
Application	Growth promotion

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

Quality control testing

Quality control test specifications are listed in Table 1.

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 2 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 culture media, including HyClone CDM4NS0 and CDM4MAb media.

Table 2. Supplement matrix

	Amino acids	Vitamins	Glucose	Trace elements	Growth factors	Hypoxanthine/ thymidine	ADCF* lipids	ADCF* cholesterol	Suitable for	Product code
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	Product code
HyClone SFM4MAb liquid medium With L-glutamine	500 mL bottle	SH30513.01
	1000 mL bottle	SH30513.02
	5 L bag	SH30513.03
	10 L bag	SH30513.04
	20 L bag	SH30513.05
	50 L bag	SH30513.06
	100 L bag	SH30513.07
	200 L bag	SH30513.08
	500 L bag	SH30513.09
HyClone SFM4MAb liquid medium Without L-glutamine	500 mL bottle	SH30391.01
	1000 mL bottle	SH30391.02
	5 L bag	SH30391.03
	10 L bag	SH30391.04
	20 L bag	SH30391.05
	50 L bag	SH30391.06
	100 L bag	SH30391.07
	200 L bag	SH30391.08
	500 L bag	SH30391.09
HyClone SFM4MAb powder medium Without L-glutamine	10 × 1 L*	SH30535.01
	1 × 5 L*	SH30535.02
	1 × 10 L*	SH30535.03
	1 × 50 L†	SH30535.04
	1 × 100 L†	SH30535.05
	1 × 500 L†	SH30535.06

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

Related products

Products	Size	Product code
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

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