SFX-Insect

HYCLONE MEDIA AND SUPPLEMENTS

HyClone™ SFX-Insect is a versatile cell culture medium developed through the HyClone Metabolic Pathway Design process (see box) to support the growth of multiple insect cell lines and production of a variety of recombinant proteins using the baculovirus expression vector system (BEVS).

SFX-Insect medium provides excellent growth of many key insect cell lines, including Sf9, Sf21, High Five™ (T.ni) and D.Mel-2 cells, while requiring minimal adaptation. Additionally, SFX-Insect medium has been successfully tested in a variety of culture systems ranging from T-flasks, shaker flasks, and various traditional and disposable bioreactors. SFX-Insect medium is available as liquid or powder medium in bottles, bags, or custom packaging (Fig 1).

Key features of SFX-Insect medium:

- Protein-free formulation
- Designed for high cell yield and recombinant protein production
- Complexed lipids for enhanced stability
- Supports direct and sequential adaptation
- High performance growth in multiple culture systems including high-density bioreactors
- Manufactured from traceable components according to cGMP guidelines

Specifications

- Protein-free
- Contains poloxamer 188
- Does not contain phenol red
- Contains 10 mM L-glutamine

Fig 1. SFX-Insect 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, such as cell line, specific clones, media, and feeds, as well as processes to maximize viable cell densities and productivity. Our experts in medium design and development know and understand these factors at the metabolic level. They evaluate each metabolic profile, understanding nutritional demands and waste creation, to make sure the correct nutrient type and quantity is used to minimize waste and resultant cell toxicity. Our experts use their understanding of metabolic pathways to optimize media for enhanced viable cell densities and productivity. Once the medium has been optimized using this Metabolic Pathway Design process, our scientists can help you devise an effective cell culture strategy using a combination of media and feeds to further enrich productivity and reduce process inefficiencies.

Suggested preparation

Reconstitution of SFX-Insect powder medium

1. While stirring, add SFX-Insect powder medium to cell culture-grade water at 90% of final preparation volume (41.32 g/L). Mix until dissolved. If your water source is normally cool, it might be useful to adjust the water temperature. Using warmer room temperature water (22°C to 25°C) will improve dissolution time. Mix for 20 min or until dissolved.
2. Add 0.35 g/L sodium bicarbonate and 1.5 mL glycerol. Mix until dissolved.
3. Adjust pH to 6.1 to 6.4, if necessary.
4. Bring vessel to final volume with cell culture grade water. Allow solution to mix for 10 to 20 min.
5. Check pH and osmolality. Expected values:
   - pH 6.1 to 6.4
   - Osmolality 355 to 385 mOsm/kg
6. Sterile filter into desired container using a 0.2 µm sterile filter.

Preparation note

SFX-Insect contains 10 mM L-glutamine.

General culture recommendations

1. Cultures should be incubated at 27°C in an ambient gas 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 ~ 5.0 × 10^5 cells/mL. Higher densities (e.g., 10.0 × 10^5 cells/mL) can facilitate quicker adaptation.

Direct adaptation

1. Transfer cells grown in current medium directly into SFX-Insect medium at 5.0 × 10^5 cells/mL.
2. When viable cell density reaches 2 to 4 × 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 SFX-Insect 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 SFX-Insect 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

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

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.

Quality control testing

Quality control test specifications are listed in Table 1.

Table 1. Test specifications[1]

Liquid medium	
Appearance	Clear yellowish solution
Osmolality	350 to 380 mOsm/kg
pH	6.1 to 6.4
Sterility	No growth (bacteria or fungi)
Endotoxin	≤ 10.0 EU/mL[1]
Powder medium	
Appearance	Off-white, free-flowing powder
pH without $NaHCO_3$	4.0 to 5.0
Solubility	Clear solution at 1× concentration
Endotoxin	≤ 10.0 EU/mL[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 media for your biopharmaceutical manufacturing process.

Related products

HyClone SFM4Insect is a versatile animal-derived component-free cell culture medium developed through the Metabolic Pathway Design process to support the growth of multiple insect cell lines and production of a variety of recombinant proteins without compromising performance.

Ordering information

HyClone SFX-Insect medium is manufactured in homogenous liquid lot sizes up to 10 000 L and powder lots up to 250 000 L.

Product	Size	Product code
HyClone SFX-Insect liquid medium	500 mL PETE* bottle	SH30278.01
	1000 mL PETE* bottle	SH30278.02
	1 L bag	SH30278.08
	5 L bag	SH30278.05
	10 L bag	SH30278.06
	20 L bag	SH30278.03
	50 L bag	SH30278.04
	100 L bag	SH30278.07
	200 L bag	SH30278.09
HyClone SFX-Insect MP powder medium	5 L HDPE† bottle	SH30350.02
	10 L HDPE† bottle	SH30350.03
	50 L polybag/pail	SH30350.05
	100 L polybag/pail	SH30350.06
	500 L polybag/pail	SH30350.07
	1000 L polybag/drum	SH30350.08

Related products	Size	Product code
HyClone SFM4Insect liquid medium With L-glutamine	500 mL PETE* bottle	SH30913.01
	1000 mL PETE* bottle	SH30913.02
	1 L bag	SH30913.03
	5 L bag	SH30913.04
	10 L bag	SH30913.05
	20 L bag	SH30913.06
	50 L bag	SH30913.07
	100 L bag	SH30913.08
	200 L bag	SH30913.09
HyClone SFM4Insect powder medium With L-glutamine	5 L bottle†	SH30912.01
	10 L bottle†	SH30912.02
	50 L bottle†	SH30912.03
	100 L polybag/pail	SH30912.04
	500 L polybag/pail	SH30912.05
	1000 L polybag/pail	SH30912.06

* Polyethylene terephthalate (PETE)
† High density polyethylene (HDPE)

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