HyClone™ media and supplements

Cell Boost™ 1 Supplement

HyClone Cell Boost 1 Supplement is designed to provide nutrients such as amino acids, vitamins, and glucose as part of fed-batch cell culture strategies (Fig 1). Cell Boost 1 Supplement has been developed for recombinant protein production with various cell lines including Chinese hamster ovary (CHO) and human embryonic kidney (HEK) 293 cells.

Key features of Cell Boost 1 Supplement include

- Chemically defined
- Animal-derived component-free (ADCF)
- Protein-free
- No L-glutamine or poloxamer 188
- Manufactured according to cGMP guidelines

Fig 1. Cell Boost supplements are chemically defined and animal-derived component-free.

Specifications

Cell Boost 1 Supplement is developed through the HyClone Metabolic Pathway Design process (see box) to improve productivity through a multi-vitamin feed approach. Cell Boost 1 Supplement has been tested on a variety of cell lines including CHO and HEK 293 cells. Figure 2 shows tissue plasminogen activator (tPA) production from CHO cells cultured in CDM4CHO medium supplemented with Cell Boost 1.

Cell Boost 1 Supplement powder should be stored protected from moisture in a tightly sealed container.

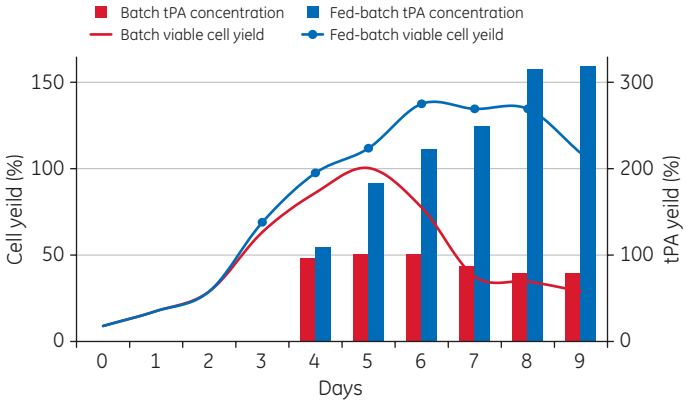

Fig 2. Production of recombinant tPA using a CHO cell line cultured in HyClone CDM4CHO medium during a 3 L stirred tank bioreactor culture. Fed-batch culture employed using Cell Boost 1 Supplement on days 3 to 8.

Suggested preparation

Two suggested preparations/applications are outlined.

Suggested preparation of a 3.5% solution

1. Add 35 g of Cell Boost 1 Supplement to 900 mL of cell culture-grade water. If your water source is normally cool, it may 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. Adjust volume to 1 L and filter through a 0.2 µm sterile filter.

Metabolic Pathway Design process

An optimal cell culture process is dependent of 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 of a 10% solution

1. Add 100 g of Cell Boost 1 Supplement to 850 mL of 0.5 N NaOH.
2. Allow to stir for 20 min.
3. Adjust volume to 1 L with 0.5 N NaOH.
4. Stir for 10 min.
5. Filter through a 0.2 µm sterile filter.
6. Prior to use, adjust the solution to pH 7.4 to 7.8 using sterile 1 N HCl. Recommendation is to use pH-adjusted supplement within 2 h.

Preparation notes

Alternatively, powder may be hydrated in water and then adjust to pH 9.5 to 10 with 5 N NaOH to solubilize formulation.

Store Cell Boost 1 Supplement liquid solution at 2°C to 8°C, away from light.

General culture recommendations

Suggested 3.5% solution application

Supplement 100 to 200 mL/L, one or more times, starting during early to mid growth phase. It is anticipated that this will be day 2 to 4. Start culture at a reduced volume according to anticipated feeds. Continue supplementation daily until final volume is reached. It is recommend to monitor L- glutamine separately and supplement as needed.

Suggested 10% solution application

Recommended supplementation range is between 5 and 40 mL/L, one or more times, starting mid to late growth-phase. It is anticipated that this will be day 2 to 4 of the culture. It is recommend to monitor L-glutamine separately and supplement as needed.

Related products

The six Cell Boost supplements have been designed to provide nutrients such as amino acids, vitamins, lipids, cholesterol, glucose, and/or growth factors in combinations suitable for multiple mammalian cell types. In addition to the Cell Boost supplement line, GE Healthcare offers concentrated liquid supplements designed to provide lipids and cholesterol to cell lines such as NS0, as well as specific nutrients for those cells using the glutamine synthetase (GS) gene expression system.

Table 1 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.

HyClone GS-Max supplement

Developed based upon traditional GS supplement formulations to provide the additional nutrients needed for high productivity in GS-cloned CHO and NS0 cell lines.

HyClone CDM4CHO medium

Increases process yields in the manufacture of recombinant proteins using a variety of CHO cell clones.

HyClone CDM4NS0 medium

Increases process yields in the manufacture of MAbs using a variety of NS0 cell clones.

HyClone CDM4MAb medium

Increases process yields in the manufacture of MAbs for therapeutic use in a variety of engineered hybridoma and recombinant myeloma cell lines.

HyClone CDM4PERMAb medium

Increases process yields in the production of human antibodies and recombinant proteins when using PER.C6™ technology.

HyClone CDM4HEK293 medium

Supports high cell density and specific cell productivity in suspension cultures.

Table 1. 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 Cell Boost 1 Supplement	100 g	SH30584.02
	500 g	SH30584.03
	1000 g	SH30584.04
	5000 g	SH30584.05

Related products	Code number
HyClone Cell Boost kit	SH30890
HyClone LS250 supplement	SH30555
HyClone LS1000 supplement	SH30554
HyClone GS-Max supplement	SH30586
HyClone CDM4CHO powder medium	SH30556
HyClone CDM4CHO liquid medium	SH30557, SH30558
HyClone CDM4NS0 powder medium	SH30578
HyClone CDM4NS0 liquid medium	SH30579
HyClone CDM4MAb powder medium	SH30800
HyClone CDM4MAb liquid medium	SH30801, SH30802
HyClone CDM4PERMAb powder medium	SH30872
HyClone CDM4PERMAb liquid medium	SH30871
HyClone CDM4HEK293 powder medium	SH30859
HyClone CDM4HEK293 liquid medium	SH30858

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