



BalanCD CHO Perfusion

ENABLE YOUR PERFUSION PROCESS AND MAXIMIZE PRODUCTIVITY

A high performing medium to maximize CHO perfusion processes

Support the growth and productivity of CHO cells in perfusion culture systems with BalanCD CHO Perfusion, a chemically defined, complete, and ready-to-use medium. Optimize and achieve key perfusion metrics including cell-specific productivity, volumetric productivity, and cell-specific perfusion rate (CSPR) for continuous, steady-state, and N-1 perfusion cultures.

- Adaptable and scalable for a variety of perfusion culture platforms, including perfusion-mimic and perfusion-capable bioreactors
- Supports multiple CHO cell subtypes
- Optimize perfusion processes to achieve cost-effective production of biotherapeutics
- Delivers consistent, optimal cell productivities at 1 vessel volume per day (VVD)
- Available in liquid and powder formats



This product is for further manufacturing purposes, not for injection or diagnostic procedures.

Global Supply Continuity for Bioprocessing

BalanCD CHO Perfusion is manufactured in a cGMP-compliant facility using qualified raw materials sourced from a solid supply chain to ensure continuity of supply and lot-to-lot reliability for CHO media-specific applications. Our stringent oversight provides confirmation of formula and assurance that BalanCD CHO Perfusion medium meets the highest global and regional standards while fulfilling regulatory demands with each manufacturing lot file.

- Stringent raw materials control and sourcing program
- cGMP-compliant manufacturing
- COA, COO, TSE/BSE statements
- ISO13485, EN 13485:2016 certified
- Drug Master Files (DMF) supported*

* Available upon request



Optimize perfusion processes and cell productivity

Perfusion platforms provide many advantages in the production of pharmaceutical therapies, including a smaller production footprint, longer production periods, and potential savings. Identifying an appropriate medium should be considered a key activity to assure that scale-up and manufacturing needs are met.

Key attributes for high-performing perfusion media

- Low Vessel Volume per Day (VVD)
- High Viable Cell Density (VCD)
- Cell Specific Productivity (qP)
- Volumetric Productivity (VP)
- Low Cell-Specific Perfusion Rates (CSPR)

Factors in choosing perfusion medium

- Ease of use and cost-effective performance
- Scale-up to commercial manufacturing
- Flexibility and adaptability to perfusion culture platforms
- Maximizes cell specific and volumetric productivities
- Minimizes cell specific perfusion rate
- Maintains steady-state for optimal productivity at low operating VVD medium exchange rates

Cell Growth: Viable Cell Density (VCD) and Viability

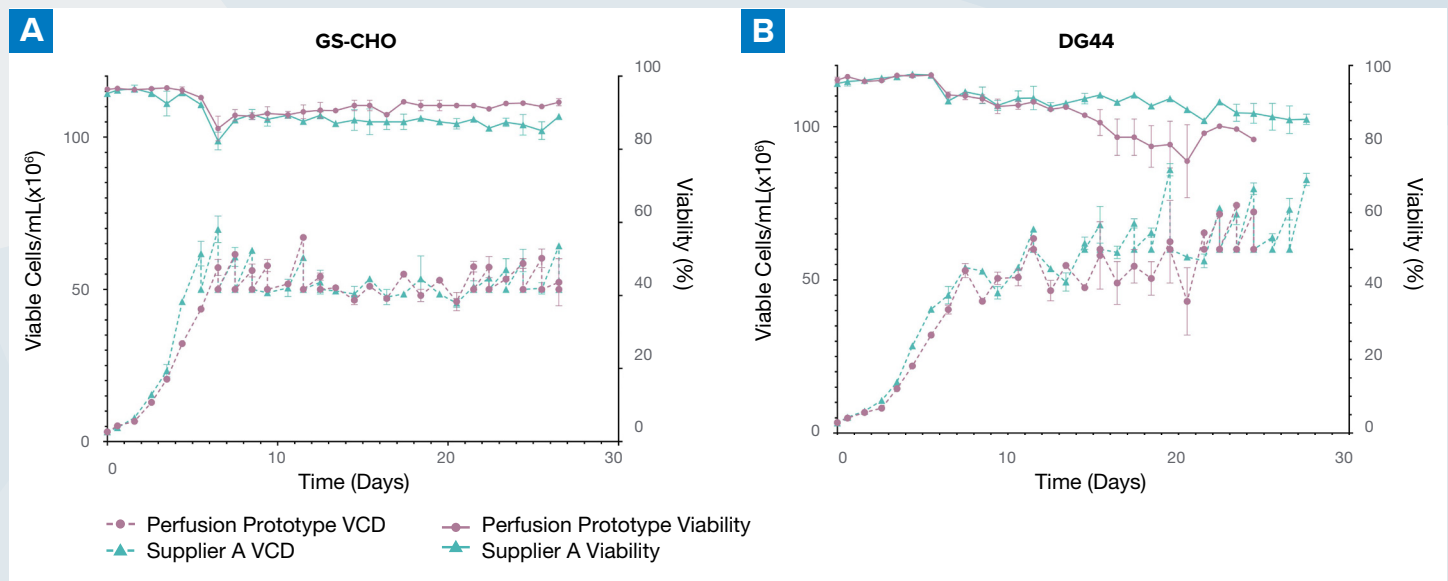


Figure 1. Growth of GS-CHO (A) and CHO DG44 (B) cells in an Ambri® 15 microbio reactor system, utilizing a perfusion-mimic model to assess the Perfusion Prototype medium. Growth profiles with daily manual bleeds are demonstrated, showing comparable cell growth for Perfusion Prototype and Supplier A medium. Steady-state cell densities were targeted at 50 million cells/mL and 60 million cells/mL, respectively for each cell line. Cultures (performed in duplicate, error bars) were monitored daily for viable cell density (VCD) and viability.

Cell Productivity in Small Scale Perfusion-Mimic System

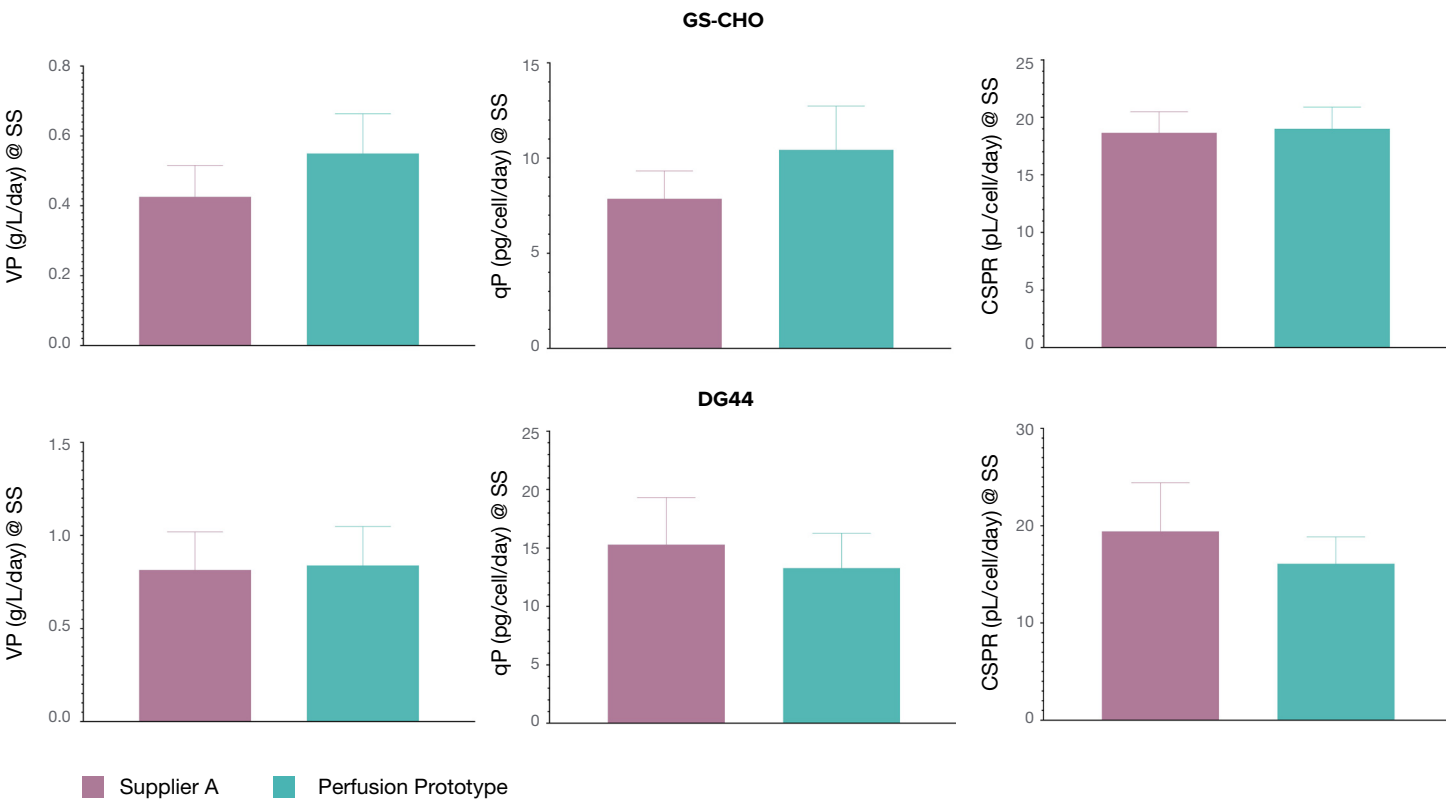


Figure 2. Perfusion metrics including volumetric productivity (VP), cell-specific productivity (qP), and cell-specific perfusion rate (CSPR) were calculated during the steady-state growth of GS-CHO and DG44 cell lines in an Ambr® 15 microbioreactor. Cultures were performed in duplicate (error bars), utilizing Supplier A or Perfusion Prototype medium.

Determining Steady-State for Perfusion

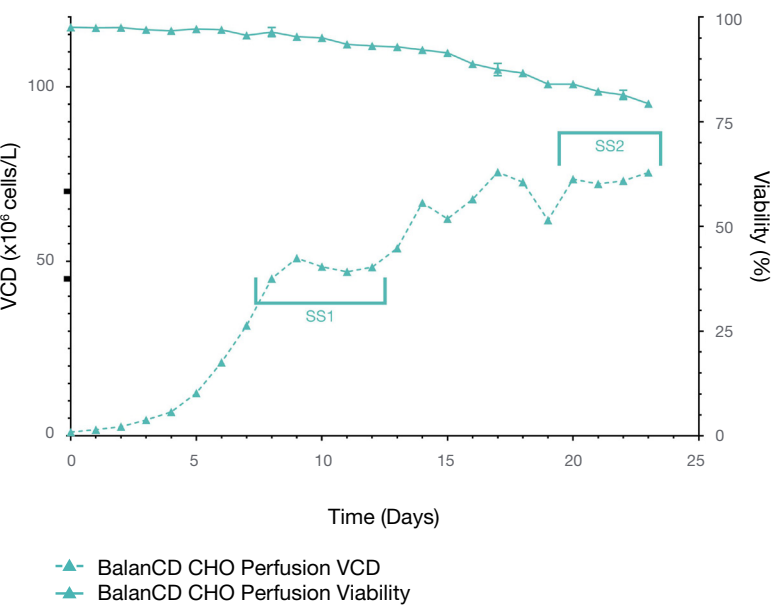


Figure 3. Growth of a DG44 cell line in a 250mL perfusion-capable bioreactor with an alternating tangential flow filtration (ATF) device and utilizing BalanCD CHO Perfusion at 1 vessel volume per day (VVD). Cells were targeted at 45 million (SS1) and 70 million (SS2) viable cells/mL to determine optimal steady-state for perfusion. Upon achieving 45 million cells/mL, cells were sustained at SS1 for 5 days, utilizing an auto bleed feature. Cells were then grown to 70 million cells/mL and auto bled to maintain SS2. Cultures (performed in duplicate) were monitored daily for viable cell density (VCD), viability, and titer. BalanCD CHO Perfusion was capable of achieving high cell densities at 1 VVD throughout the 24-day bioreactor run.

Cell Productivity in Steady-State Perfusion

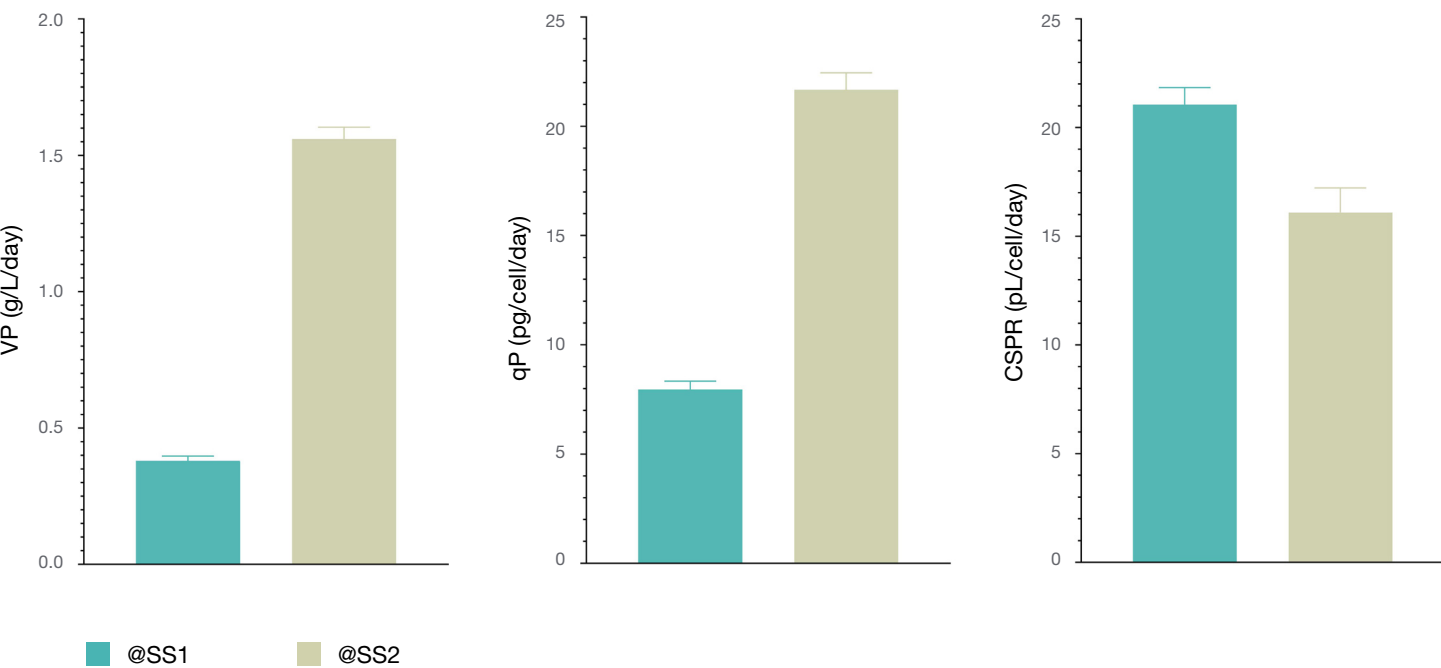


Figure 4. Perfusion metrics including volumetric productivity (VP), cell-specific productivity (qP), and cell-specific perfusion rate (CSPR) were calculated at steady states SS1 (45 million cells/mL) and SS2 (70 million cells/mL) for BalanCD CHO Perfusion. Perfusion metrics at SS2 demonstrate that VP, qP and CSPR can be improved by pushing the culture to higher cell densities. VP and qP values increased 4-fold and 2.5-fold, respectively, while the CSPR value decreased by 24%, demonstrating high productivity and performance from BalanCD CHO Perfusion at higher cell densities.

Cell Growth: N-1 Perfusion

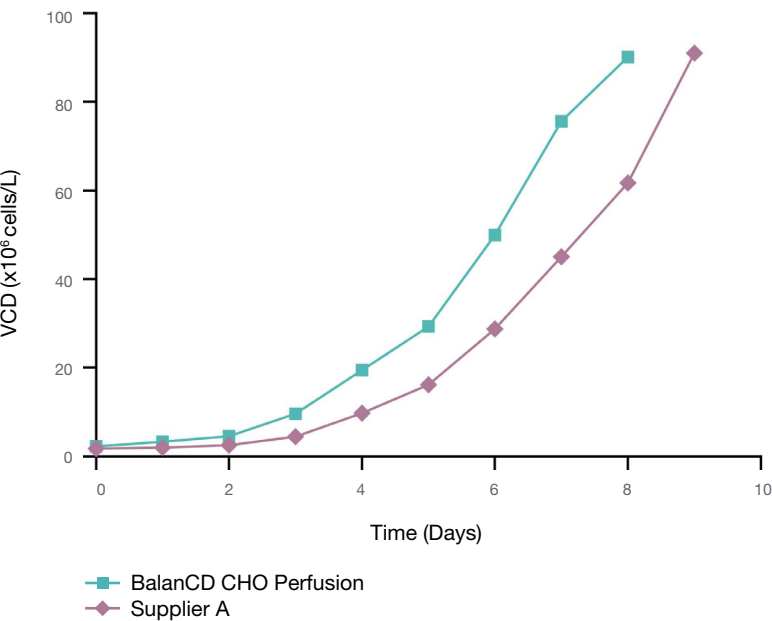


Figure 5. BalanCD CHO Perfusion was used as an N-1 perfusion medium in a small-scale 250 mL bioreactor. A CHO DG44 cell line achieved 90 million cells/mL in 8 days of culture, utilizing an alternating tangential flow filtration (ATF) device and a 1 vessel volume per day (VVD) medium exchange rate beginning on day 2.

Ordering Information

Product	Catalog #	Size*	Additional Information
BalanCD CHO Perfusion, Liquid	91178	1 L	Chemically defined, animal component-free formula
BalanCD CHO Perfusion, Powder	94149	10 L	Chemically defined, animal component-free formula
Anti-Clumping Supplement	91150	50 mL	Animal component-free formula

*Custom sizes and packaging available upon request.



To learn more about BalanCD CHO Perfusion, the BalanCD CHO Media Platform, and the Perfusion Media Survey Panel, please contact your representative at getinfo@irvinesci.com or visit www.irvinesci.com/contact-us.

www.irvinesci.com

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Value from Innovation

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