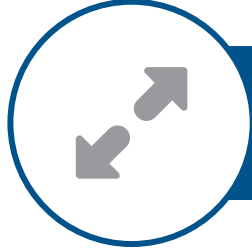




EfficientFeed+ Supplements

The world leader in serving science

Enjoy an Improved Process with These Feeding Benefits



Flexibility

Reduce feed volume for **maximum working volume**

Reduce feed volume for **less dilution**

Increase feeding within the available space for **higher titers**



Simplicity

Comparable performance when scaling up, switching between liquid and Gibco™ Advanced Granulation Technology™ (AGT™) formats

Easier reconstitution **decreases potential errors**

Fewer closed-system connections **reduce contamination risk**

How would **flexibility** and **simplicity** benefit your process development or scale-up?

EfficientFeed A+, B+, and C+ Supplements

Available in two formats

1 AGT format

- 1, 10, and 100 L
- Can be concentrated

2 Liquid format

Available in 1 L bottle and in 10 L
BioProcess Container with Thermo Scientific™
Aegis™ 5-14 film

Liquid formats are concentrated

- Gibco™ EfficientFeed™ A+ (3X) Supplement
- Gibco™ EfficientFeed™ B+ (3X) Supplement
- Gibco™ EfficientFeed™ C+ (2X) Supplement

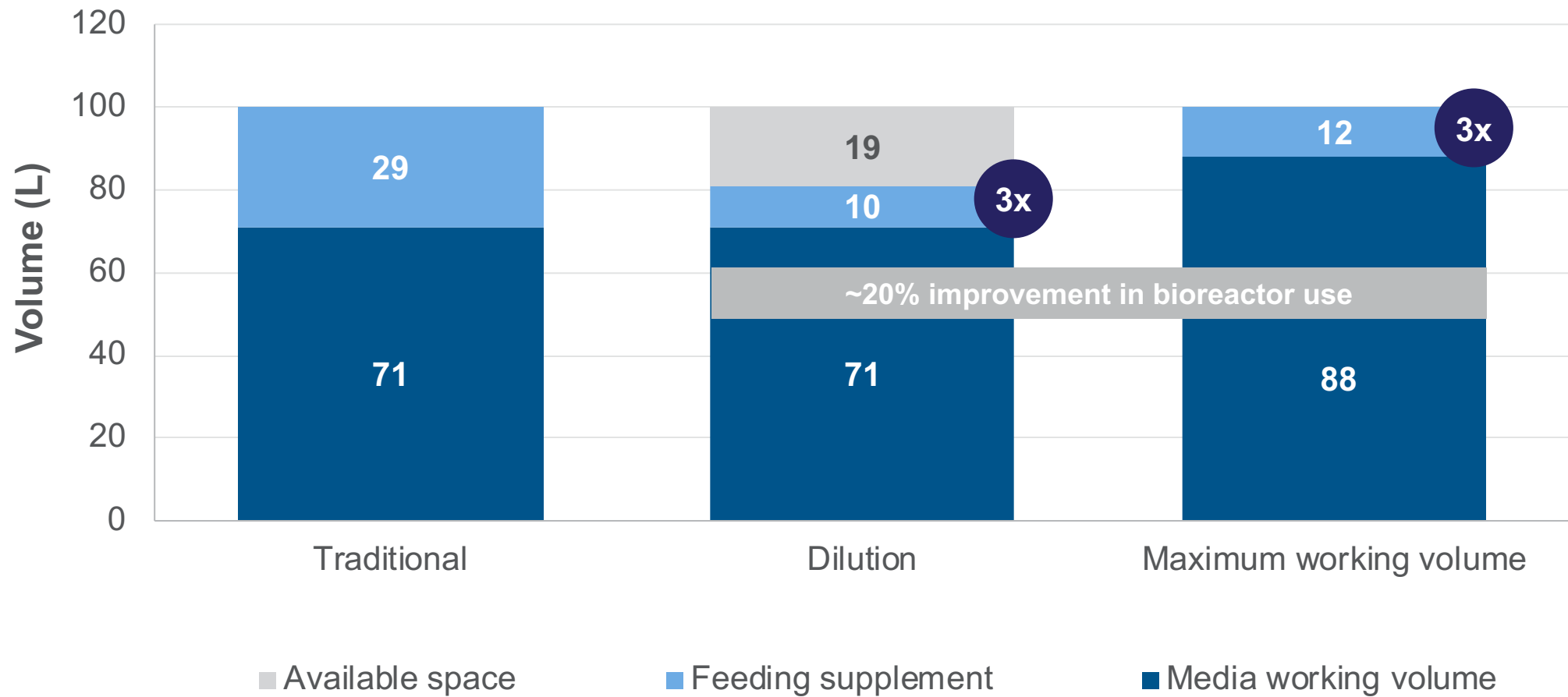




Flexibility

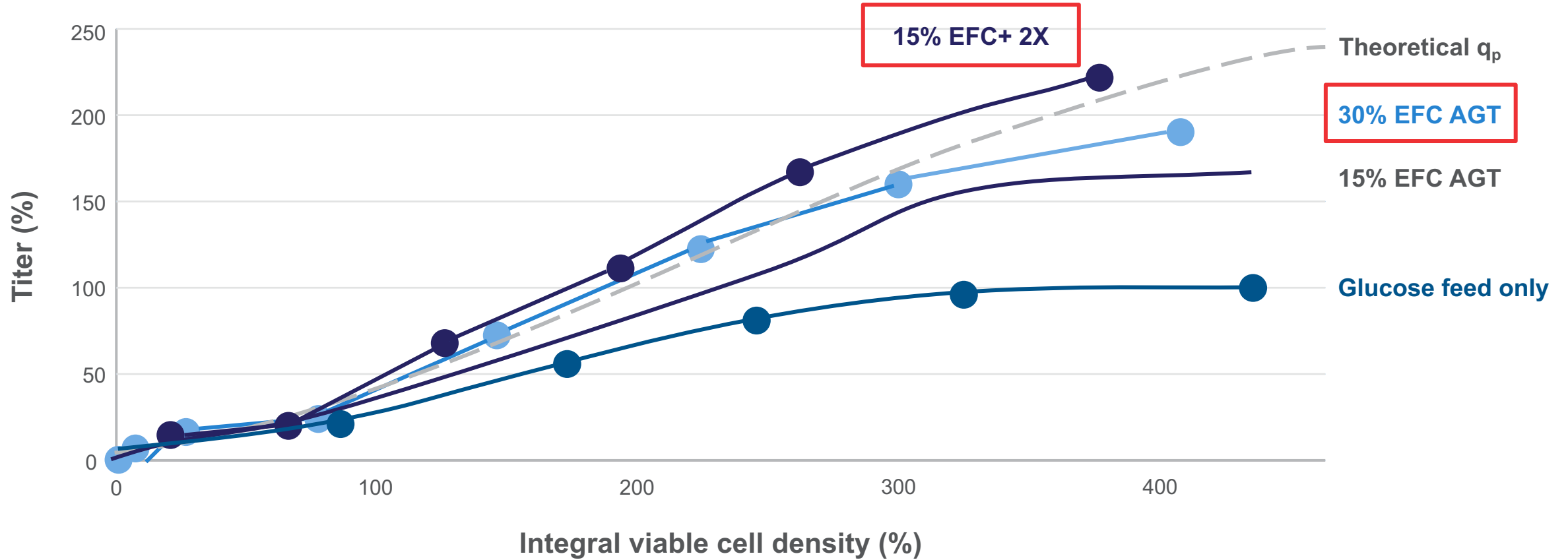


Maximize Bioreactor with Concentrated Liquid and EfficientFeed AGT Supplements



Decrease the need to compromise on feed optimization

Achieve Greater Productivity with Reduced Product Dilution



Notes: EFC = EfficientFeed C

CHO DG44 cells in Gibco™ CD FortiCHO™ medium supplemented with 30% EfficientFeed C or 15% EfficientFeed C+ AGT supplement

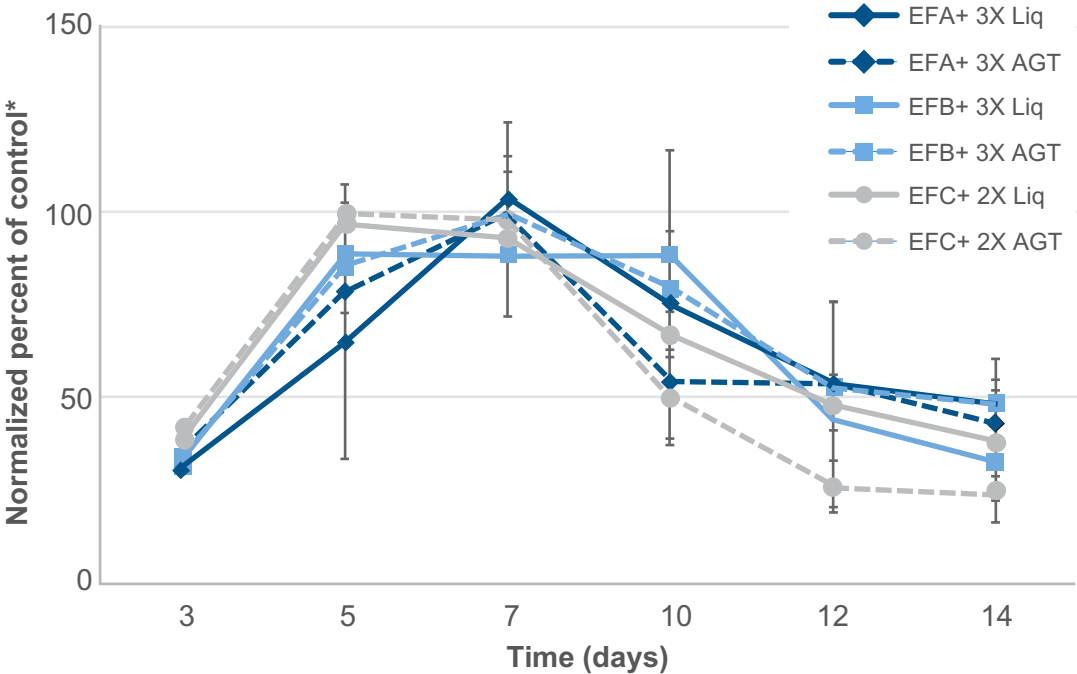


Simplicity

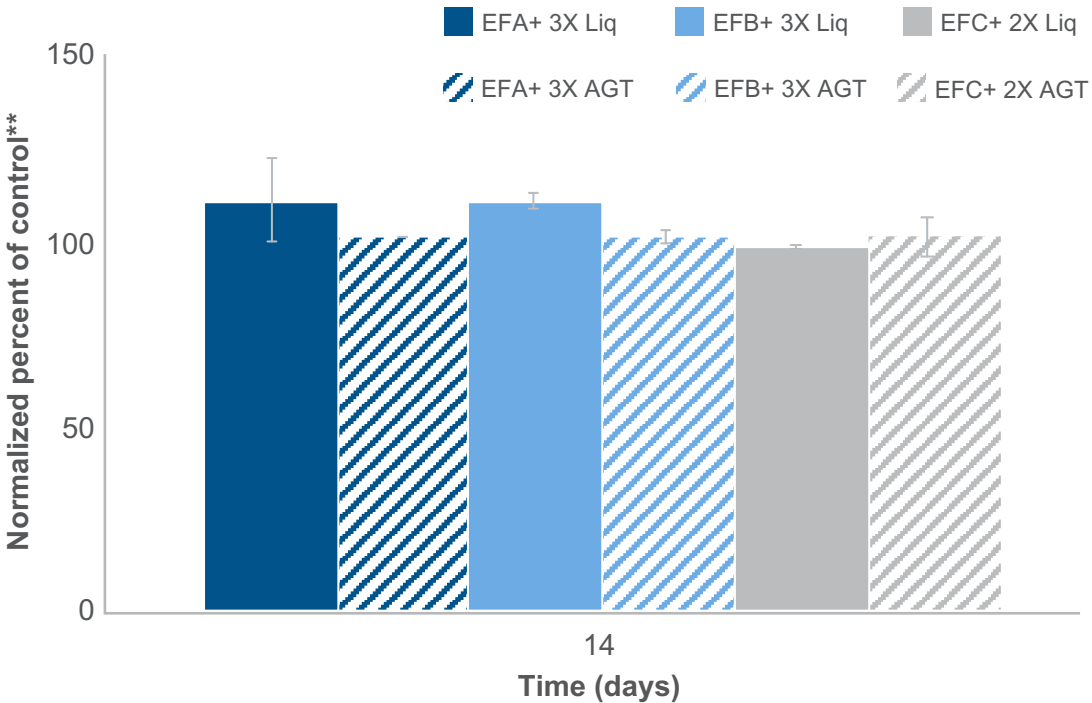


Comparable Performance Between Liquid and AGT Formats

EfficientFeed supplement with CHO-S:
average growth

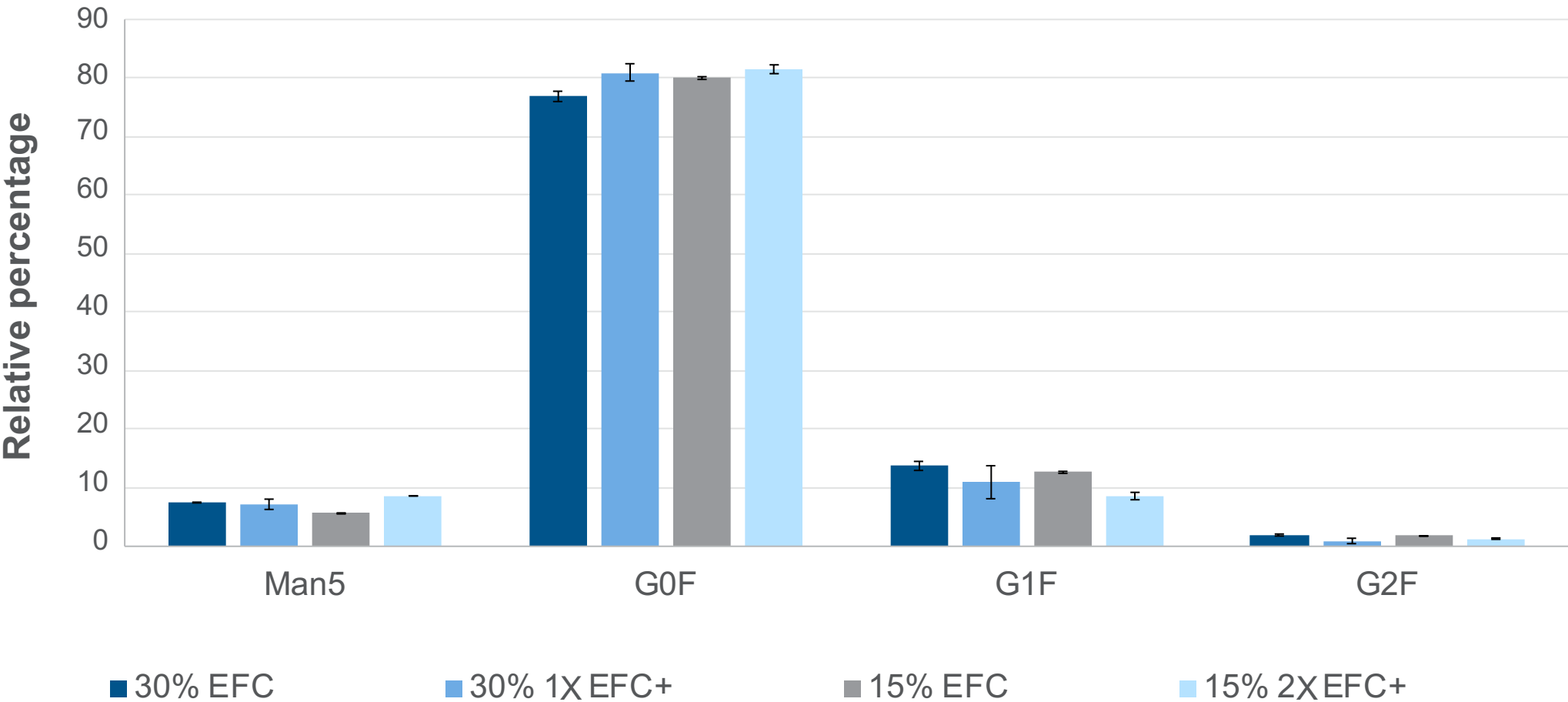


EfficientFeed supplement with CHO-S:
average titer



* Control: average viable cell density of AGT
** Control: average titer of AGT

EfficientFeed AGT Supplements Provide Consistent Protein Quality



Consistency in protein quality means optimizing feeding **won't require regulatory trade-offs**

More Steps = More Risks

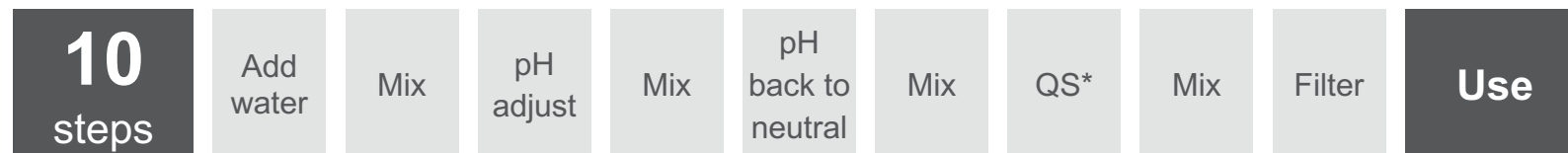
EfficientFeed liquid supplement



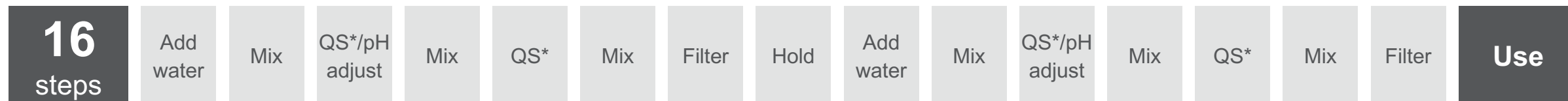
EfficientFeed AGT supplement



Other single-part feed



Multiple-part feed



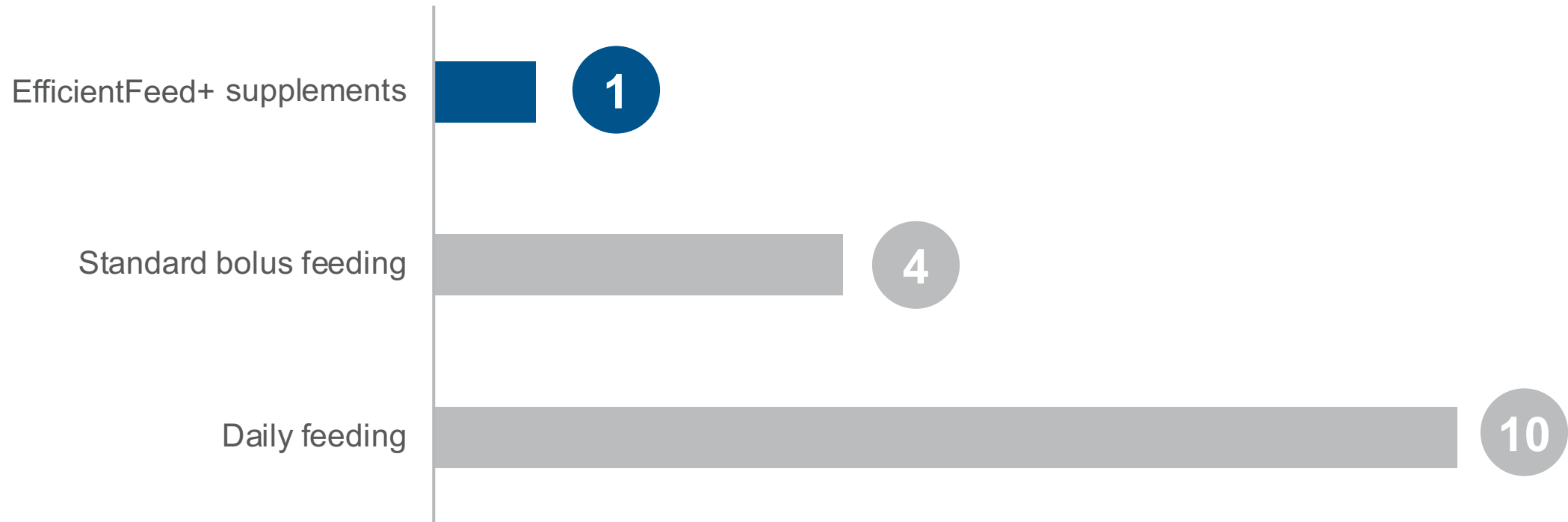
Risks associated with more steps:

- Safety in handling caustics for pH adjustment
- Overshooting salt addition in pH adjustment
- Reconstitution errors
- Local high-pH regions or hotspots

* QS = Quantity sufficient

Room Temperature Simplicity: Reduces Contamination Risk

Typical number of closed-system connections required



Fewer closed-system connections = **less contamination risk**



Superconcentrated



EfficientFeed A+, B+, and C+ AGT Supplement Design

Superconcentrated



Target:
150–200 g/L

Neutral pH



pH range:
6.5–7.1

Simple to prepare



**Just add
water**

Hydrates quickly



≤90 min

Flexible

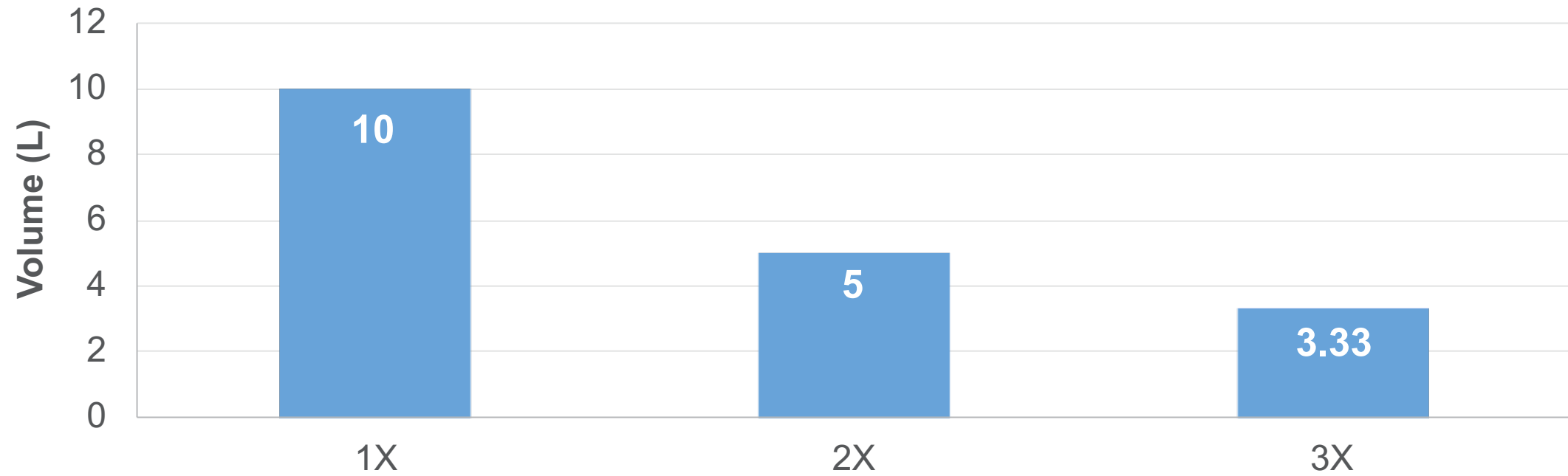


**Add less water
to concentrate**

Designed for **more flexibility and simplicity**

Superconcentrate AGT Format Easily by Adding Less Water

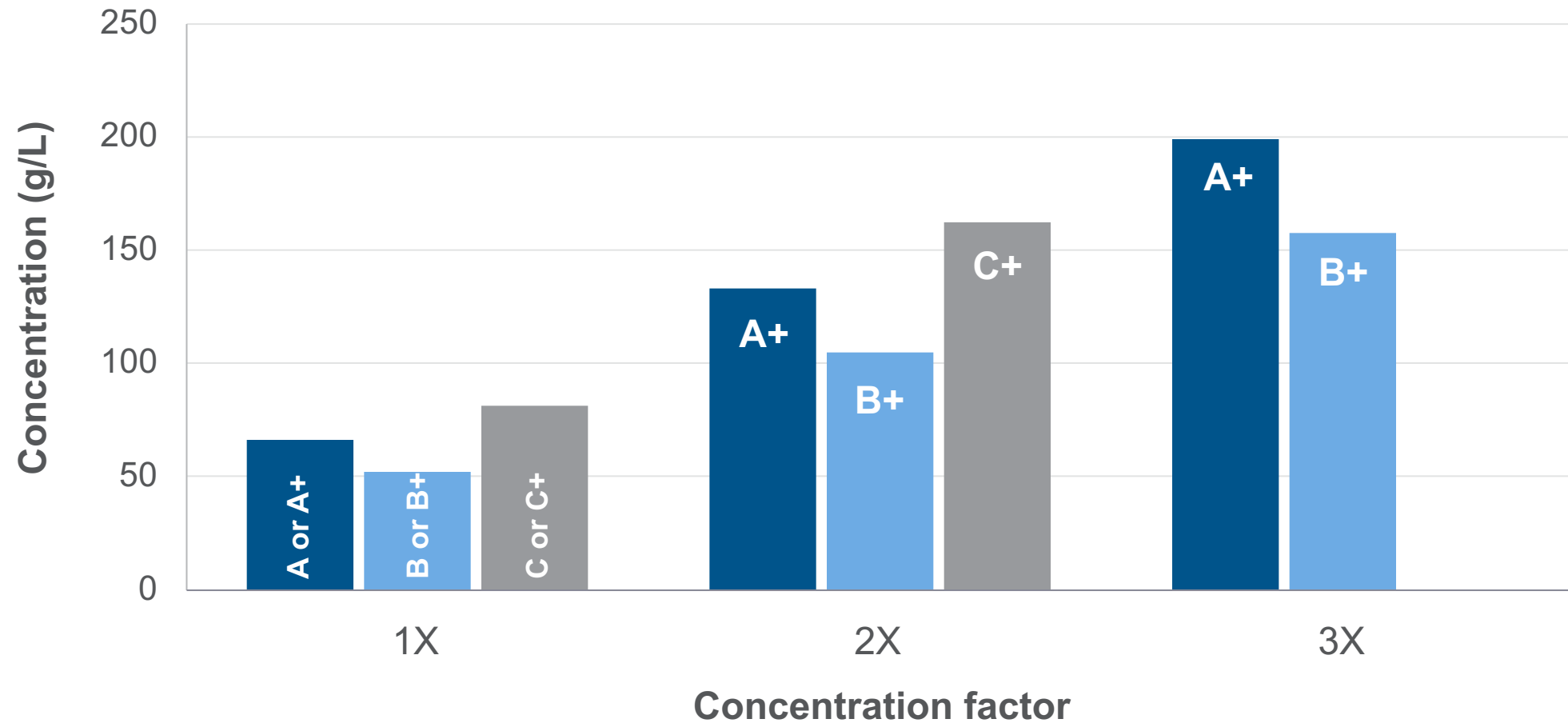
Example: comparison of final volumes for reconstitution of 10 L packages of EfficientFeed A+, B+, and C+ supplements



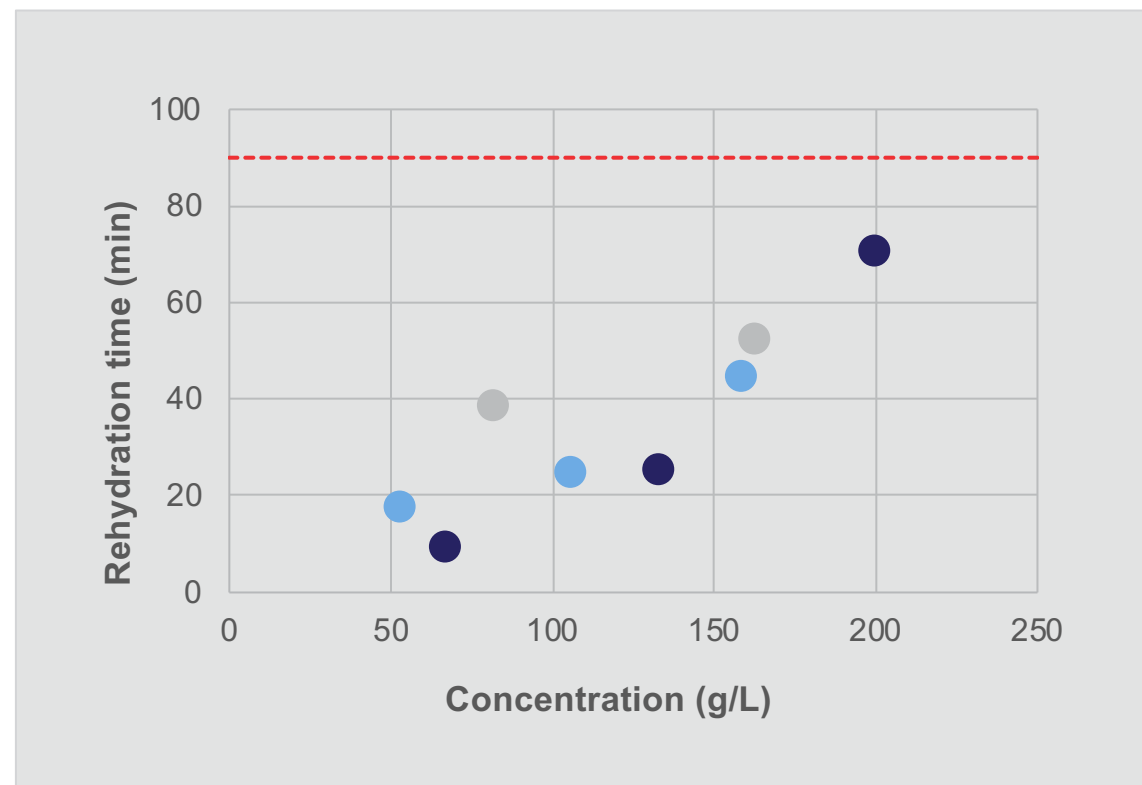
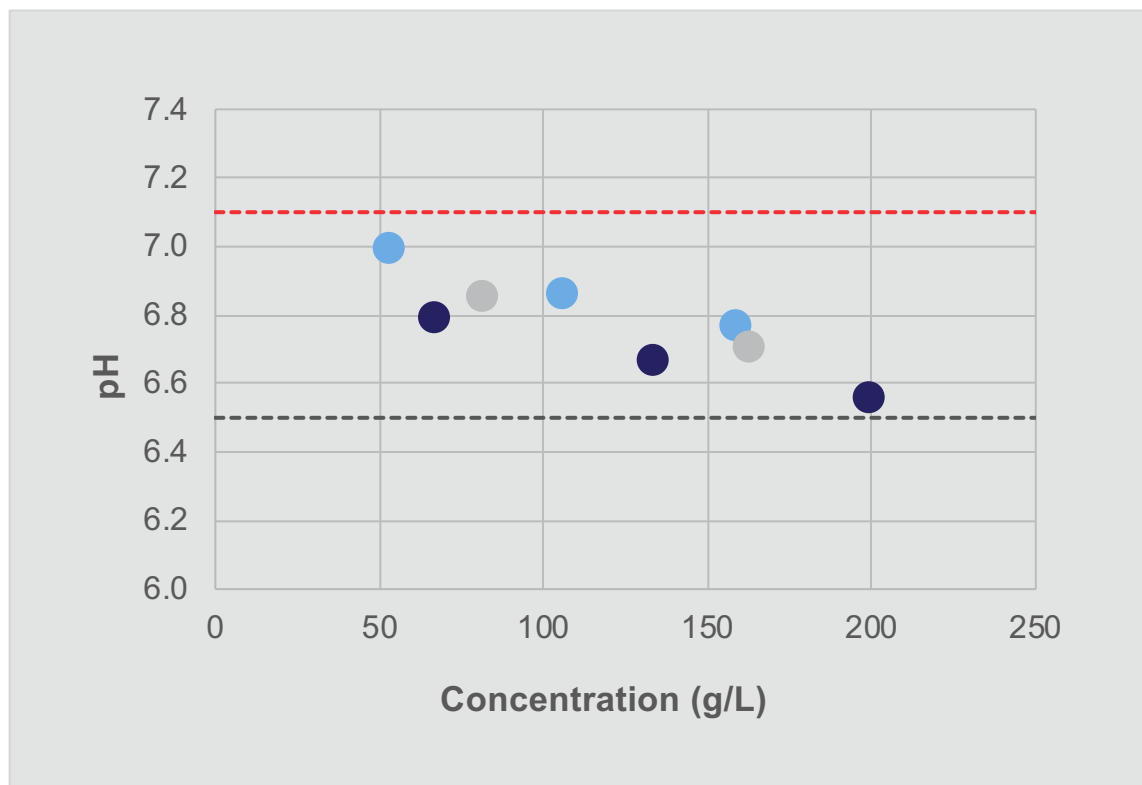
Less dilution can mean **easier downstream processing**

Superconcentration From Original Concentrates of ~50–80 g/L to ~150–200 g/L

Efficient Feed supplement concentrations



No Long Mixing Times Required Even at Highest Concentrations: EfficientFeed A+, B+, and C+ AGT Supplements Are pH-Neutral



● EfficientFeed A+

● EfficientFeed B+

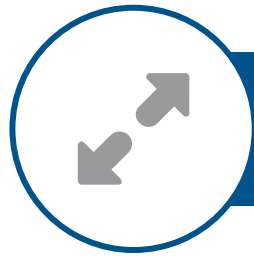
● EfficientFeed C+

EfficientFeed products are **easy to reconstitute** and use



Summary and Ordering Information





Flexibility

Reduce feed volume for
maximum working volume

Reduce feed volume for **less dilution**

Increase feeding within the
available space for **higher titers**



Simplicity

Comparable performance when scaling up, switching
between liquid and Gibco™ Advanced
Granulation Technology™ (AGT™) formats

Easier reconstitution **decreases potential errors**

Fewer closed-system connections
reduce contamination risk

Accomplish more while minimizing risk with EfficientFeed supplements

Gibco Feed Kits Are Available to Simplify Testing

What you get with the kit:

- 3 L of EfficientFeed+ AGT feeding supplements for the price of ~1.5 L
- Contents of kit
 - 1 L EfficientFeed A+ Supplement
 - 1 L EfficientFeed B+ Supplement
 - 1 L EfficientFeed C+ Supplement
 - Protocols (manual) on a flash drive

How to order:

Gibco™ Feed Kit A+, B+, C+ (Cat. No. A3315801)



When more than one EfficientFeed product may be needed to get the best result, this kit allows you to test 1 L of each to determine the best fit

AGT Format Ordering Information

| Product | Quantity | Cat. No. |
|---------------------------------|----------|----------|
| EfficientFeed A+ AGT Supplement | 1 L | A2502304 |
| EfficientFeed A+ AGT Supplement | 10 L | A2502305 |
| EfficientFeed A+ AGT Supplement | 100 L | A2502301 |
| EfficientFeed B+ AGT Supplement | 1 L | A2503004 |
| EfficientFeed B+ AGT Supplement | 10 L | A2503005 |
| EfficientFeed B+ AGT Supplement | 100 L | A2503001 |
| EfficientFeed C+ AGT Supplement | 1 L | A2503104 |
| EfficientFeed C+ AGT Supplement | 10 L | A2503105 |
| EfficientFeed C+ AGT Supplement | 100 L | A2503101 |
| Gibco Feed Kit A+, B+, C+ | 3 L | A3315801 |

thermofisher.com/efficientfeed

Liquid Format Ordering Information

| Product | Quantity | Cat. No. |
|--------------------------------|----------|----------|
| EfficientFeed A+ 3X Supplement | 1,000 mL | A3937401 |
| EfficientFeed A+ 3X Supplement | 10 L | A3937402 |
| EfficientFeed B+ 3X Supplement | 1,000 mL | A3937501 |
| EfficientFeed B+ 3X Supplement | 10 L | A3937502 |
| EfficientFeed C+ 2X Supplement | 1,000 mL | A3937601 |
| EfficientFeed C+ 2X Supplement | 10 L | A3937602 |

Custom orders are now available in any BioProcess Container (BPC) size

thermofisher.com/efficientfeed



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The world leader in serving science

EfficientFeed Supplement and Media Guide

These are not universal, but would be a good place to start

| CHO cell type | Banking medium contains growth factor | Customer will sequentially adapt cells | Media option | Matched feed option |
|-------------------|---------------------------------------|--|---|-----------------------------------|
| CHO-S | N | Y | Gibco™ Dynamis™ Medium | EfficientFeed C+ Supplement |
| Gibco™ ExpiCHO-S™ | Y | Y | Gibco™ ExpiCHO™ Stable Production Medium (with GlutaMAX™ added) | EfficientFeed C+ Supplement |
| ExpiCHO-S | N | N | ExpiCHO SPM | EfficientFeed C+ Supplement |
| DG44/DXB11 | N | N | Gibco™ CD OptiCHO™ Medium | EfficientFeed A+ Supplement |
| CHO-K1 | N | Y | Dynamis Medium | EfficientFeed C+ Supplement |
| GS CHO | N | Y | Dynamis or CD OptiCHO Medium | EfficientFeed C+ or B+ Supplement |
| Other CHO | N | Y | Dynamis Medium | EfficientFeed C+ Supplement |