



# ClonaCell™-CHO ACF Supplement

## Robust Growth of CHO Cells at Low Cell Density

### Challenges in CHO Cell Line Development

Efficient development and production of novel biopharmaceuticals depends on innovations in cell culture technology. As a result, the need for faster and more effective bioprocessing techniques has driven significant advances in the formulation of cell culture media for Chinese hamster ovary (CHO) cells. Protein-free and platform media for CHO cells are now standard tools that promote efficient cell line development and scale-up, ultimately minimizing development timelines and maximizing the volumetric productivity of CHO cell cultures. Protein-free media, however, do not support robust growth of CHO cells at the low cell densities required for single-cell cloning. Rare, high-producing clones can also be lost immediately after transfection or during other sensitive stages of cell line development due to poor survival or expansion of CHO cells in protein-free medium. The efficiency and success of cell line development can be improved by adding a medium supplement to protein-free CHO cell culture media in order to significantly increase clonal survival and growth of CHO cells at critical process points.

### ClonaCell™-CHO ACF Supplement

The ClonaCell™-CHO ACF Supplement significantly improves cloning efficiency and promotes robust growth of CHO cells. This defined, 40X medium supplement can be added to liquid or semi-solid protein-free cell culture media to support CHO cell survival and expansion, especially at low cell density. Add ClonaCell™-CHO ACF Supplement to a protein-free cell culture medium to achieve cloning efficiencies comparable to medium containing 10% fetal bovine serum (FBS) (Figure 1), while maintaining defined culture conditions. The ClonaCell™-CHO ACF Supplement does not contain serum, animal- or human-derived components, hydrolysates or any other undefined components, and reliably supports growth of CHO cultures with consistent quality attributes.

#### Advantages of ClonaCell™-CHO ACF Supplement :

- Does not contain animal-derived components, hydrolysates or any other undefined components
- Supports CHO cell growth at low cell densities
- Can be added to protein-free culture media without changing culture conditions for upstream or downstream processes

**PRODUCT:** ClonaCell™-CHO ACF Supplement  
**CATALOG #:** 03820 **SIZE:** 2.5 mL

#### RECOMMENDED FOR:

- Increasing cloning efficiency of CHO cells during cloning by limiting dilution, semi-solid cloning or single-cell sorting
- Promoting CHO cell survival and growth after transfection
- Supporting CHO cell expansion

#### CONTAINS:

- Recombinant proteins and chemically defined components as a 40X concentrated solution.



#### FREE SAMPLE

Learn more about ClonaCell™ products for CHO cell line development or request a sample:

[www.stemcell.com/Try\\_ClonaCell](http://www.stemcell.com/Try_ClonaCell)



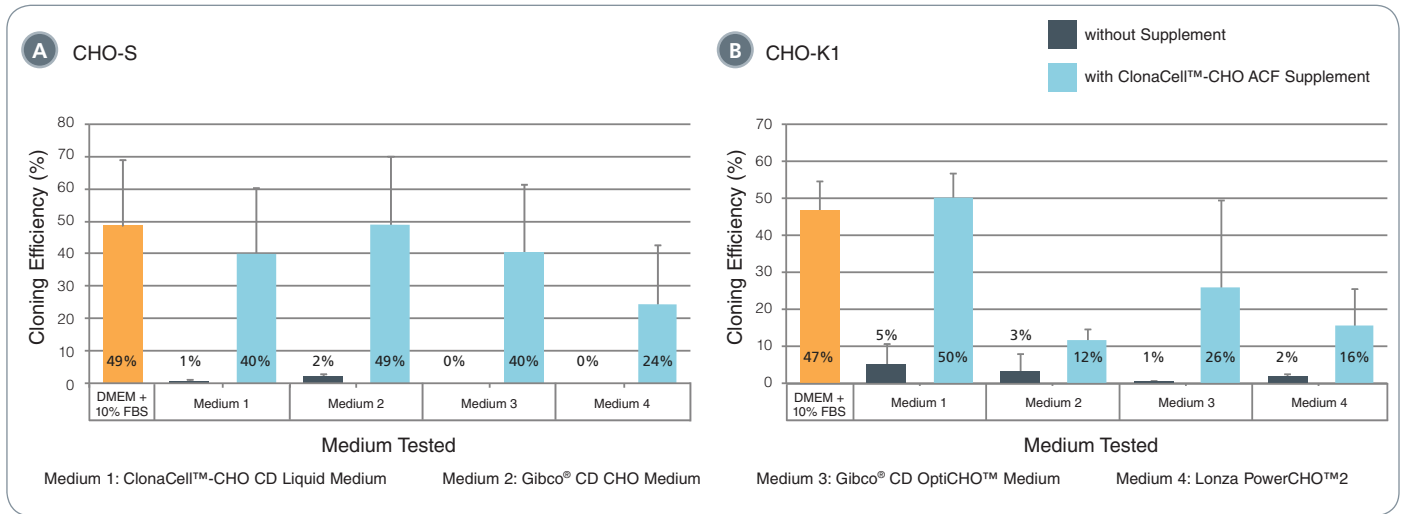
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Robust Growth of CHO Cells at Low Cell Density



**Figure 1.** Cloning efficiencies of CHO-S and CHO-K1 cells in protein-free media from different commercial suppliers with and without addition of ClonaCell™-CHO ACF Supplement.

The bar graphs illustrate the cloning efficiency of untransfected CHO-S (A) and CHO-K1 (B) cells, defined as the percentage of wells in 96-well plates that contain greater than 100 cells after 14 days of incubation. Individual wells of a 96-well plate were seeded with an average cell density of one cell per well in 200  $\mu$ L cell culture medium and incubated at 37°C and 5% CO<sub>2</sub>. All conditions contained 6 - 8 mM L-glutamine. Cloning efficiencies in various protein-free cell culture media with (blue) or without (grey) addition of ClonaCell™-CHO ACF Supplement or in DMEM + 10% FBS (orange bar) are shown. Error bars represent the standard deviation based on triplicate data for each condition, except Medium 2 (both with and without ClonaCell™-CHO ACF Supplement), for which the average of duplicate data is shown.

PRODUCT	CATALOG #	DESCRIPTION	RECOMMENDED FOR
ClonaCell™-CHO ACF Supplement	03820	Defined, animal component-free CHO cell culture medium supplement	Supplementing protein-free cell culture medium to increase cloning efficiency or support CHO cell expansion after transfection
ClonaCell™-CHO CD Liquid Medium	03817	Liquid CHO cell culture medium	Culturing suspension-adapted CHO cells; single-cell cloning of CHO cells when combined with ClonaCell™-CHO ACF Supplement
ClonaCell™ FLEX	03818	Semi-solid base medium	Converting a user-selected liquid medium (2X concentrate) into a custom semi-solid cloning medium
ClonaCell™-CHO CD Medium	03815	Semi-solid cloning medium; chemically defined and protein-free	Selection and cloning of transfected, suspension-adapted CHO cells
ClonaCell™-CHO ACF Medium	03816	Semi-solid cloning medium; animal component-free	Selection and cloning of transfected, suspension-adapted CHO cells

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