

cQrex[®] AAQ plus

The next generation of stabilized glutamine
for biopharmaceutical research and production

cQrex[®]



The challenges of glutamine supply

Evonik provides the biopharmaceutical industry with a portfolio of highly purified amino and keto acids, chemically defined non-animal-derived dipeptides, customized media ingredients, and application services under its cQrex® brand. Cells growing in culture usually cover their energy needs

with carbohydrates, such as glucose and the amino acid glutamine. This makes glutamine a crucial nutritional component as well as an important source of nitrogen in all cell culture media. Using glutamine, however, comes with a challenge: it is unstable in solution.

cQrex® AAQ plus: improved glutamine stability and productivity for cell culture

cQrex® AAQ plus offers a combination of the two stabilized glutamine dipeptides L-alanyl-L-glutamine (AQ) and N-acetyl-L-alanyl-L-glutamine (AAQ) formulated as a 200 mM solution in 0.85 % NaCl. The peptide ratio is optimized so that the product provides the right balance between growth rate and productivity.

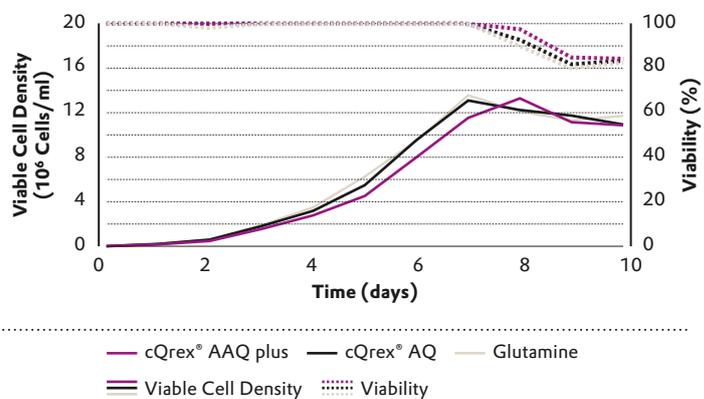
While the relatively fast uptake and metabolization of AQ shows beneficial effects on the cellular growth and viable cell density, slower uptake of AAQ results in a higher cell-specific productivity. Balancing speed of uptake and cell growth brings another valuable benefit: reduced metabolic by-products.



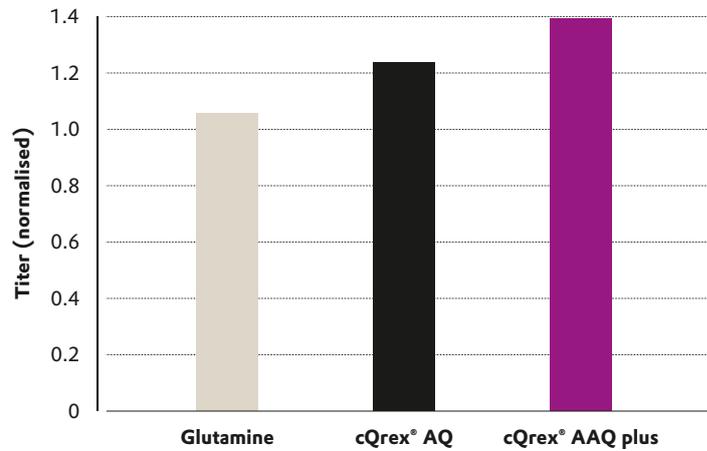
cQrex® AAQ plus is an easy-to-use liquid concentrate suitable for both adherent and suspension mammalian cell cultures.

In the cultivation of a CHO DG44 cell line (see graphs below), the supplementation with cQrex® AAQ plus resulted in higher specific productivity.

cQrex® AAQ plus leads to a slightly reduced growth rate but reaches the same viable cell density peak as glutamine and cQrex® AQ, when used in equimolar concentrations. In addition, the cell viability is improved.



With **cQrex® AAQ plus**, the lower growth rate results in a more efficient channelling of building blocks and energy equivalents to mAB-formation: the cells reach a higher specific and total productivity compared to the other glutamine sources.



How to use cQrex® AAQ plus?

cQrex® AAQ plus can be used as a direct replacement for L-alanyl-L-glutamine-based supplements at equimolar concentrations in your current cell culture medium formulation. The recommended concentration in the final medium

is typically between 4 and 10 mM (equimolar replacement of free L-glutamine or L-alanyl-L-glutamine, respectively). Positive results are often seen between 6 to 8 mM.

Concentration	Amount per L medium
4 mM	20 ml
6 mM	30 ml
8 mM	40 ml
10 mM	50 ml

It is important to allow the cells to undergo two to three passages for adaption, as the performance after one passage may not be sufficiently elevated.

The subculturing should be considered during the development of the experimental plan.

Qrex® AAQ plus in a nutshell

- Optimized formulation of glutamine peptides
- Easy-to-use liquid concentrate
- Chemically stable glutamine source
- Increased cell-specific productivity
- Lower lactate and ammonia levels than free glutamine

Description	Size
200 mM solution in 0.85 % NaCl: • L-alanyl-L-glutamine • N-acetyl-L-alanyl-L-glutamine	100 ml

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