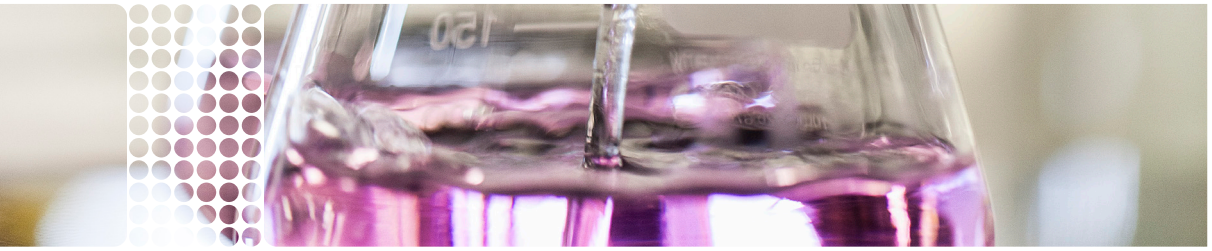

Case study

Optimizing CHO-S cell culture medium by supplementation with animal-free insulin

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Background

The Chinese Hamster Ovary (CHO) cell line is widely used for the production of recombinant proteins due to its high growing capacity and productivity. Adapting cell culture media for each specific cell line is key to exploit these features for cost effective and fast product generation.

This study focuses on the improvement of CHO-S cell growth producing the antibody Herceptin by addition of animal-free recombinant insulin (r-insulin) as a supplement to commercially available chemically defined media.

Study Description

Three commercial serum-free and chemically defined media (AntiCHO, CDCCHO, and FortiCHO) were supplemented with different insulin concentrations (0, 1, 5, and 10 mg/L). Cell density, cell viability and Herceptin production were measured.

Results

The addition of different concentrations of insulin to the three different commercially available media resulted in higher cell density and viability, already at low insulin concentration (fig. 1a, b, c). Herceptin production was also improved by the addition of insulin to the three different chemically defined media (fig. 2).

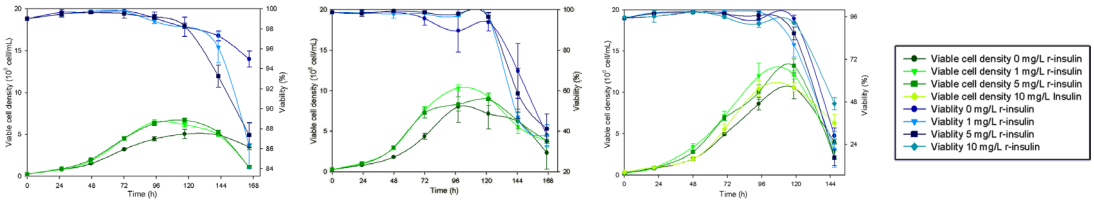

Figure 1: Growth kinetics of CHO-S cell line in 3 different serum-free media with r-insulin. CHO-s growth in ActicHO (A), CDCHO (B), and FortiCHO (C) serum free formulations with different concentration of r-insulin as indicated in the legend. Values presented are the mean ± SD (n=3). Cell density was significantly improved in all the media.

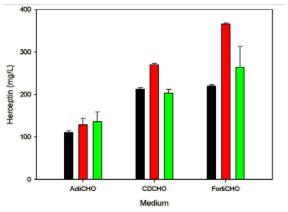

Figure 2: Production of Herceptin. Comparison of Herceptin production at 120h with different concentrations of r-insulin: 0 mg/L (black), 1 mg/L (red) and 5 mg/L (green).

Conclusion

- Insulin supplementation to three commercially available chemically defined media (ActiCHO, CDCCHO and FortiCHO) has a positive effect on cell growth.
- Insulin supplementation improves Herceptin production in CHO-S cell line.

Further information

In case of any questions, please contact our Global Product Manager Sara Bursomanno at usbu@novonordisk.com

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