5-6-2018

Dxb11/taut host cell engineering strategy enabling the establishment of strains producing the highest yield of advanced recycling antibodies

Hisahiro Tabuchi  
Chugai Pharmaceutical Co, tabuchihsh@chugai-pharm.co.jp

Masaki Yamaguchi  
Chugai Pharmaceutical Co., LTD

Tao Jialin  
Chugai Pharmaceutical Co., LTD

Hirokatsu Makitsubo  
Chugai Pharmaceutical Co., LTD

Follow this and additional works at: http://dc.engconfintl.org/ccexvi

Part of the Engineering Commons

Recommended Citation

http://dc.engconfintl.org/ccexvi/52

This Abstract and Presentation is brought to you for free and open access by the Proceedings at ECI Digital Archives. It has been accepted for inclusion in Cell Culture Engineering XVI by an authorized administrator of ECI Digital Archives. For more information, please contact franco@bepress.com.
**ABSTRACT**

Innovation in monoclonal antibodies (mAbs) production for clinical use continues to be driven by cell engineering strategies to increase mAb yield and to control the complexity of advanced recycling antibodies (rAbs). rAbs offer significant advantages for efficacy by delivering specific antigens in endosomes and recycling free antibodies back to plasma (Ref. 1). We were able to reduce the instability in an rAb-producing CHO cell line whereby the mAb titers during the stage of cell line development was decreased, and were able to improve cell culture optimization.

In this study, we used chemically defined media (CDM) and COM- adapted taurine transporter-overexpressing DXB11 host cells for cell line development for two different types of rAbs (rcAb-1, rcAb-2). These rAbs not only have pH-dependent antigen-binding but also a distinct mechanism of mAb uptake into cells. As described before (Ref. 2, 3), overexpression of taurine transporter (TAUT) is able to improve DXB11 cell performance. DXB11/TAUT host cells were further developed with CDM, and these enabled the establishment of strains that produced higher yields of rAbs than did DXB11 parent cells. Yields of DXB11/TAUT/rcAb-1 strains increased up to 7.0 g/L/17 days under 1:1 bioscavenger fed-batch conditions. In contrast, the mAb yields of DXB11/rcAb-1 were up to 3.5 g/L/17 days. These results suggest that our TAUT overexpression strategy has a unique potential for improvement of DXB11 host cells and is useful for the cell line development of advanced antibodies with increased complexity. Since our cell line development of DXB11/TAUT/rcAb-2 also showed significant promise, we plan to adopt the DXB11/TAUT host cell as our Super CHO cell for future development of advanced antibody drugs.

**Mechanism of rcAb-1 action**

**Mechanism of rcAb-2 action**

**Culture profiles of DXB11/TAUT/rcAb-1 strains**

**Cell line development for rcAb-1 using DXB11/TAUT cells**

**Cell line development for(rcAb-2 using DXB11/TAUT cells**

**Establishment of DXB11/TAUT host cell**

**Cell line development for rcAb-1 using CHO-K1/TAUT cells**

**CONCLUSIONS**

1. The current version of the DXB11/TAUT platform process delivers cell lines with recycling antibody yields of 7.0 g/L/17 days.
2. The CHO-K1/TAUT platform process was not appropriate for cell line development for recycling antibodies.
3. Our Super CHO platform might be useful for development of advanced drugs like talking antibodies.

**REFERENCES**