

Engineering Conferences International ECI Digital Archives

Cell Culture Engineering XV

Proceedings

Spring 5-10-2016

Influence of cultivation parameters or supplement on product qualities and culture performances during perfusion

Kyu Kim

LG Life Sciences Ltd, panda@lgls.com

Sam Seol

LG Life Sciences Ltd

Soo Ryu

LG Life Sciences Ltd

Sang Park

LG Life Sciences Ltd

Sun Kim

LG Life Sciences Ltd

See next page for additional authors

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

 Part of the [Biomedical Engineering and Bioengineering Commons](#)

Recommended Citation

Kyu Kim, Sam Seol, Soo Ryu, Sang Park, Sun Kim, and Seung Lee, "Influence of cultivation parameters or supplement on product qualities and culture performances during perfusion" in "Cell Culture Engineering XV", Robert Kiss, Genentech Sarah Harcum, Clemson University Jeff Chalmers, Ohio State University Eds, ECI Symposium Series, (2016). http://dc.engconfintl.org/cellculture_xv/104

This Abstract 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 XV by an authorized administrator of ECI Digital Archives. For more information, please contact franco@bepress.com.

Authors

Kyu Kim, Sam Seol, Soo Ryu, Sang Park, Sun Kim, and Seung Lee

INFLUENCE OF CULTIVATION PARAMETERS OR SUPPLEMENT ON PRODUCT QUALITIES AND
CULTURE PERFORMANCES DURING PERFUSION

Kyu-Yong Kim

LG Life Sciences, Ltd., Korea

panda@lgls.com

Sam-Sook Seol, LG Life Sciences, Ltd., samsook@lgls.com

Soo Hyun Ryu, LG Life Sciences, Ltd., ryush@lgls.com

Sang Woo Park, LG Life Sciences, Ltd., swpark@lgls.com

Sun Young Kim, LG Life Sciences, Ltd., ssunykim@lgls.com

Seung Joo Lee, LG Life Sciences, Ltd., sjleef@lgls.com

Perfusion processes have been developed with technological advances in single-use bioreactor and cell retention device. Perfusion has advantages such as high cell density culture in compact facilities and media change or culture parameter shifts for protein production with desired qualities. Single use bioreactor (200L or 1000L) with ATF System was used for the clinical production. For the process development, the scale-down model was established with lab-scale (2L) bioreactor with ATF2.

A recombinant CHO cell line producing a fusion protein was cultivated using in-house serum-free media. Influence of insulin (0~3mg/L) on qualities was investigated in the established perfusion process using in-house serum-free medium and 2L scale-down model. The results showed that low concentration of insulin enhanced O-glycosylation and -2 charged N-glycan of fusion protein. Temperature (30~34°C) conditions, under no addition of insulin, were investigated to evaluate effect on qualities. High temperature enhanced O-glycosylation and -2 charged N-glycan of fusion protein.

To evaluate interaction among culture parameters (Temperature, pH, and Dissolved Oxygen) in the perfusion process, Central Composite Inscribed (CCI) was selected as design of experiment. 20 perfusion cultures were carried out in the 2L scale-down model. The results showed each parameter and interactions among parameters had an effect on qualities and culture performances.