Spring 5-9-2016

Insight into single cell cloning in serum-free media

Tsuyoshi Yamaguchi
Kyowa Hakko Kirin Co, tsuyoshi.yamaguchi@kyowa-kirin.co.jp

Yumi Sugita
Kyowa Hakko Kirin Co

Mie Fukuda
Kyowa Hakko Kirin Co

Keina Yamaguchi
Kyowa Hakko Kirin Co

Yuka Mashio
Kyowa Hakko Kirin Co

See next page for additional authors

Authors
Tsuyoshi Yamaguchi, Yumi Sugita, Mie Fukuda, Keina Yamaguchi, Yuka Mashio, Koichi Yamamoto, and Toshiyuki Suzawa

INSIGHT INTO SINGLE CELL CLONING IN SERUM-FREE MEDIA

Tsuyoshi Yamaguchi, Kyowa Hakko Kirin Co., Ltd.
100-1, Hagiwara-machi, Takasaki, Gunma, 370-0013, Japan
T: +81-27-353-7569, F: +81-27-353-7400, tsuyoshi.yamaguchi@kyowa-kirin.co.jp
Yumi Sugita, Mie Fukuda, Keina Yamaguchi, Yuka Mashio, Koichi Yamamoto, Toshiyuki Suzawa,
Kyowa Hakko Kirin Co., Ltd.

Chinese hamster ovary (CHO) cells have been used as host cells for the manufacturing of therapeutic recombinant proteins over the past decade. It is thought that the development of high performance cell lines, which satisfy both productivity and regulatory expectations, is one of the key success drivers to establish good manufacturing processes. The cell line for the clinical and commercial productions should be derived from a single progenitor or clone, and so the single cell cloning is an essential step during the cell line development. Recently serum-free media have been widely applied for this step. But under such conditions, the cloning efficiency varies significantly among the clones. This might be because the serum-free conditions can be stressful for the CHO cells exposed to such an unexpected cloning process.

In this study, we performed re-cloning from two pre-cloned cell lines to evaluate the impact of serum-free cloning on the resulting cell line characteristics; various parameters such as cell growth, productivity, fed-batch culture performance, product quality and cell stability were evaluated. As a result, most of the clones showed exactly the same performance before and after the cloning process, but some clones did not. The detail of these results will be presented and also the proper evaluation to be needed during cell line development, especially after the single cell isolation, will be discussed.