

Use of hollow fiber systems for rapid and direct scale up of antibody production from hybridoma cell lines cultured in CL-1000 flasks using BD Cell MAb medium

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Abstract

The combination of BD Cell MAb medium with the CL-1000 flask is increasingly being used to generate a few hundred milligram of antibody for early stage research projects. Cells are inoculated at 2 million per ml, and the antibody is harvested after 15 days or when the antibody concentration reaches above 10 mg ml⁻¹, whichever comes first. Currently, there is no means to scale up beyond this production level using this technology. In this study, we evaluated hollow fiber technology as the scale up alternative. The hollow fiber system was run in batch mode to mimic the method used for the CL-1000 with BD MAb medium. The FL-NS murine hybridoma cell line was simultaneously inoculated at 2 million cells per ml in a CL-1000 and the Maximizer hollow fiber bioreactor system, a 21-fold theoretical scale up over the CL-1000. The Maximizer produced 23-fold more antibody, very close to the expected theoretical amount. However, production was complete after 9 days in the Maximizer, while the CL-1000 required the full 15 days for production. In summary, these results demonstrate successful scale up of antibody production from the CL-1000 to a hollow fiber system. Antibody - CL-1000 - Hollow fiber bioreactor - Hybridoma - Scale up

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