

# In situ product recovery of single-chain antibodies in a membrane bioreactor.

Meier K, Carstensen F, Scheeren C, Regestein L, Wessling M, Büchs J (2014) In situ product recovery of single-chain antibodies in a membrane bioreactor. *Biotechnol Bioeng* 111(8), 1566-1576.

[Details](#)



## Abstract

The demand for biopharmaceuticals, such as monoclonal antibodies, has risen significantly over the last years. To be competitive, continuous production processes that yield consistent product quality and an economic advantage are desirable. In this study, an in situ product recovery process is described, involving use of submerged membranes to recover single-chain antibodies from a continuous fermentation of *Hansenula polymorpha* yeast cells. Reverse-flow diafiltration (RFD) was applied to prevent cake layer formation. Optimal flux ranges for this process could be identified by a systematic flux step method. The RFD process was optimized, preventing mixing of permeate and unreacted substrate: the space-time yield of antibodies using RFD could be tripled. Increase of the fouling related transmembrane pressure was below 45 Pa min<sup>-1</sup> for all applied dilution rates, indicating that the filtration process was stable. The membrane as well as the feeding mode of RFD did not influence cell viability nor product concentration. A wide range of dilution rates was successfully tested, demonstrating that this process is suitable for industrial applications.

## Leibniz-HKI-Authors



Lars Regestein

[Details](#)

Identifier

