

CONTINUOUS ANTIBODY CAPTURE STEP BASED ON MAGNETIC BEADS

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The integration of a perfusion culture process with periodic counter chromatography currently draws a lot of attention in industry, with the goal of generating more efficient and flexible processes at reduced footprint. Purification process based on magnetic beads has been used for decades for analytical purposes. It shows interesting potential and begins to gain interest in the biopharmaceutical industry for fed-batch processes. This type of separation has characteristics that can facilitate continuous process integrated to perfusion operation. However integrated mAb capture using magnetic beads has not yet been published.

In this study we have designed novel system and process for the affinity purification of monoclonal antibodies (mAbs) using magnetic beads based on work we performed in a pilot-scale set-up¹. High capacity magnetic protein A agarose beads (LOABeads PrtA) were used with a prototype separation system for this development. In a proof-of-concept, the prototype set-up was tested with supernatant generated from perfusion process. As shown in Figure 1, the integrated process had a rapid adsorption of the mAb within 2 hours. It provided an overall adsorption of 94% and a yield of 87% (Figure 2). The unique use of high capacity magnetic beads together with this novel prototype system for continuous separation showed promising results, which can provide an efficient way for the integration of up-stream and down-stream process.

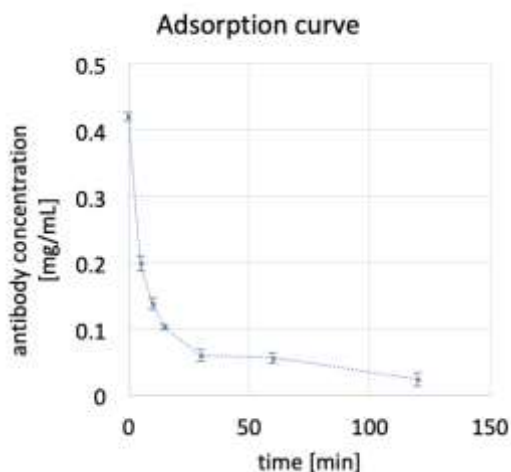


Figure 1 – Adsorption curve of mAbs in integrated magnetic bead affinity capture

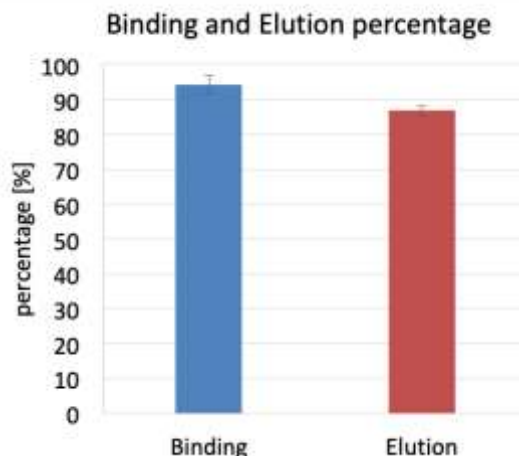


Figure 2 – mAbs binding and elution obtained in integrated magnetic bead affinity capture

1. Brechmann, N. A.; Eriksson, P.-O.; Eriksson, K.; Oscarsson, S.; Buijs, J.; Shokri, A.; Hjälml, G.; Chotteau, V., Pilot-scale process for magnetic bead purification of antibodies directly from non-clarified CHO cell culture. *Biotechnology Progress* 0, (0).