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GE Healthcare

Project description

When purifying monoclonal antibodies it is of great importance to reduce residual host cell proteins (HCP), Protein A leakage, DNA and, most importantly, aggregated antibodies. These aggregates are normally measured in percent while the other contaminants are measured in parts per million. As an answer to this challenge GE developed Capto adhere, a multimodal anion exchanger. This media is able to reduce aggregates, HCP, Protein A and DNA at the same time. The mode of action is predominantly ionic and hydrophobic but hydrogen bonding is probably also present.

Because of the multimodal action of Capto adhere different salts will probably affect the interaction properties in different ways. In this diploma work an investigation will be performed to better understand the mode of action and the salt dependence of Capto adhere.

The work to be performed can be summarized in the following:

- Start material for the experiments needs to be prepared by Protein A chromatography
- The start material will be used in 96-well chromatography plates, where many conditions can be investigated at the same time.
- Different buffer substances, salts and maybe even other additives such as detergents or organic solvents will be studied
- Analyses will predominantly be performed by size exclusion chromatography (SEC), but HCP or Protein A analyses might also be of interest
- Column chromatography will be needed to verify the results of the 96-well plates
- Experimental setup by factorial designs will be used