

A preparative purification process for recombinant Hepatitis B core antigen using online capture by expanded bed adsorption followed by size-exclusion chromatography

ABSTRACT

Hepatitis B core antigen (HBcAg) is an important serological marker used in the diagnosis of hepatitis B virus (HBV) infections. In the current study, a fast and efficient preparative purification protocol for truncated HBcAg from *Escherichia coli* disruptate was developed. The recombinant HBcAg was first captured by anion exchange expanded bed adsorption chromatography integrated with a cell disruption process. This online capture process has shortened the process time and eliminated the “hold-up” period that may be detrimental to the quality of target protein. The eluted product from the expanded bed adsorption chromatography was subsequently purified using size-exclusion chromatography. The results showed that this novel purification protocol achieved a recovery yield of 45.1% with a product purity of 88.2%, which corresponds to a purification factor of 4.5. The recovered HBcAg is still biologically active as shown by ELISA test.

Keyword: Hepatitis B core antigen; *Escherichia coli*; Online capture process; Expanded bed adsorption chromatography; Size-exclusion chromatography