

Comparative evaluation of different cell disruption methods for the release of recombinant hepatitis B core antigen from Escherichia coli

ABSTRACT

A comparative evaluation of five different cell-disruption methods for the release of recombinant hepatitis B core antigen (HBcAg) from *Escherichia coli* was investigated. The cell disruption techniques evaluated in this study were high-pressure homogenization, batch-mode bead milling, continuous-recycling bead milling, ultrasonication, and enzymatic lysis. Continuous-recycling bead milling was found to be the most effective method in terms of operating cost and time. However, the highest degree of cell disruption and amounts of HBcAg were obtained from the high-pressure homogenization process. The direct purification of HBcAg from the unclarified cell disruptate derived from high-pressure homogenization and bead milling techniques, using batch anion-exchange adsorption methods, showed that the conditions of cell disruption have a substantial effect on subsequent protein recovery steps.

Keyword: Batch anion-exchange adsorption; Bead milling; Hepatitis B core antigen; High-pressure homogenization; Lysozyme; Ultrasonication