A preparative hydrophobic interaction chromatography for purification of recombinant nucleocapsid protein of Nipah virus from clarified Escherichia coli homogenate

ABSTRACT

The downstream processing of the recombinant nucleocapsid (N) protein of Nipah virus (NiV) from Escherichia coli homogenate using a preparative hydrophobic interaction chromatography (HIC) was investigated in the present study. Ammonium sulfate precipitation experiment was performed and it showed that 15% saturation of the salt was the most suitable salt concentration for the binding buffer. Batch binding of the N protein of NiV was performed using Sepharose™ 6 Fast Flow (FF) adsorbents coupling separately with four different types of ligand; phenyl low substitution, phenyl high substitution, butyl and octyl. The phenyl low substitution ligand was selected for subsequent optimization process due to its highest yield and purity of the N protein achieved from the batch binding experiment. The HIC for purification of the N protein of NiV was further scaled-up using a 10 cm column packed with phenyl low substitution Sepharose™ adsorbent. A recovering yield of 81% of the N protein of NiV with a purification factor of 9.3 was achieved from this scaled-up operation. The antigenicity of the purified N protein was still preserved as shown in ELISA analysis.

Keyword: Hydrophobic interaction chromatography, Nucleocapsid protein, Nipah virus, Phenyl sepharose,