

Purification of long helical capsid of Newcastle disease virus from *Escherichia coli* using anion exchange chromatography

ABSTRACT

NP c375 is a truncated version of the nucleocapsid protein of Newcastle disease virus (NDV) which self-assembles into a long helical structure. A packed bed anion exchange chromatography (PB-AEC), SepFast™ Supor Q pre-packed column, was used to purify NP c375 from clarified feedstock. This PB-AEC column adsorbed 76.2% of NP c375 from the clarified feedstock. About 67.5% of the adsorbed NP c375 was successfully eluted from the column by applying 50 mM Tris-HCl elution buffer supplemented with 0.5 M NaCl at pH 7. Thus, a recovery yield of 51.4% with a purity of 76.7% which corresponds to a purification factor of 6.5 was achieved in this PB-AEC operation. Electron microscopic analysis revealed that the helical structure of the NP c375 purified by SepFast™ Supor Q pre-packed column was as long as 490 nm and 22624 nm in diameter. The antigenicity of the purified NP c375 was confirmed by enzyme-linked immunosorbent assay.

Keyword: Anion exchange chromatography; Long helical structure; Newcastle disease virus; Nucleocapsid protein; *Escherichia coli*