Production of long helical capsid of Nipah virus by Pichia pastoris.

ABSTRACT

The nucleocapsid (N) protein of Nipah virus (NiV) produced in a recombinant host can replace the use of inactivated virus as a diagnostic reagent because it is safer and affordable. The aim of this study was to express the N protein in Pichia pastoris. The N gene of NiV was cloned into the yeast expression vector, pPICZ B and expressed in P. pastoris. The recombinant N protein of NiV was purified using sucrose density gradient ultracentrifugation and was confirmed with Western blotting using rabbit anti-N antibody. The P. pastoris expressed N protein self-assembled into helical structures as large as 1.5 μm as shown in an electron micrograph. ELISA analysis performed with the swine sera obtained during the viral outbreak proved that the recombinant N protein to be highly antigenic. The NiV N protein produced in P. pastoris serves as an alternative to the recombinant N protein produced in Escherichia coli.

Keyword: Paramyxovirus; Nipah virus; Nucleocapsid protein; Helical structure; Pichia pastoris.