Nipah Virus Glycoprotein: Production in Baculovirus and Application in Diagnosis

ABSTRACT

A method for serological diagnosis of Nipah virus (NiV) is described. DNA encoding truncated G protein of NiV was clone into the pFastbac HT vector, and the fusion protein to His-Tag was expressed in insect cells by recombinant baculovirus. The resulting His-G recombinant fusion protein was purified by affinity chromatography and used as the coating antigen for serological testing by in direct enzyme-linked immunosorbant assay (ELISA). When tested against a panel of swine serum samples, the recombinant G protein-based ELISA successfully discriminated all 40 samples previously determined to be serum neutralizing test (SNT) positive from 11 SNT negative samples. The data show that the recombinant G protein exhibit the antogenic epitopes and conformation necessary for specific antigen-antibody recognition. The main advantage of the recombinant G protein-base NiV ELISA compared to and ELISA using whole virus antigen is the use of single antigenic protein instead of inactivated whole virus which is required to be prepared under high risk and cost. This test is suitable for routine diagnosis of NiV and also for epidemiological surveys as it allows highly reliable testing of a large number of sera rapidly.

Keyword: Nipah virus glycoprotein, Baculovirus, ELISA