Abstract

Classical swine fever (CSF) is an important viral disease of domestic pigs and wild boar. The causative agent classical swine fever virus (CSFV) is enveloped and contains positive sense RNA genome. It belongs to family Flaviviridae and the genus Pestivirus. The CSFV is very stable in extreme environmental conditions especially in cold frozen meat. The structural proteins E2 and E^{rns} of CSFV are immunogenic and participate in the attachment of the virion to the host cell surface and its subsequent entry. In this study, the molecular and physical characterization of lapinized CSFV vaccine was performed. The bacterial expressed recombinant E2 protein was used to develop diagnostic against CSFV infection in swine.

Newcastle disease virus (NDV) is being used as a viral vector to express heterologous proteins. The E2 and E^{rns} glycoproteins of CSFV were expressed using recombinant NDV (rNDV). The rNDV expressing E2 and E^{rns} proteins showed effective CSFV neutralization antibody titer upon vaccination studies in pigs. The vaccinated serum samples showed neutralization of heterologous CSFV strains. A diagnostic based on the principle of indirect ELISA was developed using rNDV expressed E2 and Erns proteins of CSFV. The rescued rNDV containing E2 and E^{rns} proteins of CSFV were used to develop a diagnostic based on indirect ELISA. This proposed methodology gave us an insight that the E2 protein-based diagnostic is better as compared to E^{rns}. It was also observed that addition of E^{rns} along with E2 protein reduced the efficacy of the E2 based diagnostic. The proposed methodology could be an economical alternative to existing vaccine and diagnostic for CSFV control and detection, respectively, in pigs.