ISWAVLD 2023

International Symposium of the World Association of Veterinary Laboratory Diagnosticians

29 JUNE-1 JULY 2023 Congress Centre Lyon

Towards the veterinary diagnostics of the future

Main topic : Surveillance and control of emerging diseases

Isolation and Identification of African Swine Fever Virus in Armenia

SARGSYAN K. [1], MARKOSYAN T. [1], KHARATYAN S. [1], ELBAKYAN H. [1], HAKOBYAN V. [1], SARGSYAN V. [1]

[1] "Scientific Center for Risk Assessment and Analysis in Food Safety Area" CJCS, Yerevan, Armenia

Introduction: In June and August 2007, the World Organization for Animal Health (WOAH) announced an outbreak of African swine fever (ASF) in Georgia and Armenia, where the disease rapidly became a devastating outbreak affecting pigs in almost all regions of Armenia. The purpose of this work was to evaluate the diagnostic capacity of ASF virus (ASFV) in Armenia by studying the adaptive properties of the isolate on various primary cell lines to show that the haemadsorption test can be used as a sufficient primary diagnostic tool for ASF diagnosis.

Materials and methods: During 2007-2011 we collected 147 pathological samples from pigs, prepared 10% suspensions and tested first by haemadsorption. Then positive samples were tested by immunofluorescence assay (IFA), enzyme linked immunosorbent assay (ELISA), and polymerase chain reaction (PCR) using diagnostic kits supplied by FAO/OIE as directed for confirmation. To study the reproductive properties of the isolates, primary cell cultures of bone marrow cells (BMC), leukocytes, and blood lymphocytes of pigs were infected, and eight consecutive passages were made. The infectivity titers were calculated following 48 hours of incubation at 37° C, according to the method of Reed and Munch for each of the three cell types. The blood serum of healthy pigs was used as a negative control.

Results: We determined that 117 of 147 (80%) collected samples tested positive for ASFV by haemadsorption, PCR, ELISA and IFA. Analysis of virus isolates on cell culture after 8 passages reached the following titers: BMC (5.0±0.1 TCID50/ml), leukocytes (5.25±0.2 TCID50/ml), and lymphocytes (5.75±0.1 TCID50/ml).

Conclusion: It was established that the maximum accumulation of the virulent ASFV isolate Armenia 2007 was in the culture of primary lymphocytes after 48 hours of incubation.
The isolates of the ASFV were sent to Russia, Germany and Italy for confirmation and genotyping. ASFV was confirmed and the isolates were determined to be genotype II.

Thus, the conducted analysis of the ASFV isolate, Armenia 2007, and diagnostic assays for ASFV confirmation, suggest that our diagnostics can detect future outbreaks of ASFV in the region, and the isolated strain is stored for future laboratory diagnosis of ASF in Armenia. In the event of a future outbreak in pigs, the haemadsorption assay can be run first to rule out classical swine fever. A positive haemadsorption test result is definitive for ASF diagnosis but all negative haemadsorption samples should be tested by PCR to rule out the presence of virus.