

MOLECULAR EPIDEMIOLOGY OF AFRICAN SWINE FEVER VIRUS IN NIGERIA

ABSTRACT

African swine fever (ASF) is a lethal disease of domestic pigs and wild boars caused by the ASF virus (ASFV), a DNA virus of the family *Asfarviridae*. The disease was first introduced into Nigeria in 1997 with severe socio-economic losses. ASF is underreported in the country due to a lack of financial compensation to farmers, resulting in the sale of sick pigs during outbreaks, mostly via live pig markets (LPMs) to mitigate losses but further spreading the disease. The ASFV is a complex virus with genetic variations, mutations, and recombination, which results in varied clinical outcomes during outbreaks. However, the circulating ASFV genotypes and variants responsible for outbreaks in Nigeria (2016–2021) are unknown, and sequence data from Nigerian ASFV is limited. The purpose of this study, therefore, was to understand the genetic evolution and pathway of ASFV spread in Nigeria by identifying the current ASFV genetic diversity and assessing the role of LPMs in the spread of ASFV. Genotyping of ASFV-positive samples (2016–2021) was used to identify the genetic diversity of the virus. A combination of data, sample collection, and field observations was used to assess the role of LPMs in the spread of ASF and determine the prevalence of ASF. Sequence data of the *p72* gene revealed the co-circulation of ASFV genotypes I and II, with genotype II detected for the first time. Characterization of CVR of genotypes I and II revealed 10 new variants. The study conducted at 4 LPMs revealed unregulated trading of sick and healthy pigs in Nigeria. These pigs were sourced by the LPMs from 57 villages and towns and traded to 42 major cities and towns in 13 states of Nigeria. Pig samples collected at the LPMs and analyzed by PCR revealed an ASF prevalence of 10.77% (66/613). Whereas, the prevalence study conducted in 9 states revealed an ASF prevalence of 10.21% (100/979) and seroprevalence of 17.03% (87/511). Findings from this study will enrich the knowledge of the genetic diversity of ASFV in Nigeria and present new challenges to ASF prevention, control, and vaccine development.

Keywords: African swine fever, Live pig markets, genotype, variants, Nigeria