

New Study Suggests Risk of ASF Infection by Contaminated Feed is Very Low

African Swine Fever virus (ASFV) continues to spread within the domestic and feral pigs or wild boar populations of several countries and affects global trade. ASFV is primarily spread by pig to pig contact or by swill feeding pigs pork meat products that have not been cooked adequately. ASFV can also be spread by vehicle or people movements between farms. ASFV can stay viable under a wide variety of environmental conditions for a long time, but it can be inactivated by adequate heat or chemical treatments.

Research has demonstrated that ASFV can stay viable for extended time periods on feed and certain feed ingredients that are globally traded between countries [1]. However, there is limited information about how much ASFV contamination is needed in feed or feed ingredients to cause infection if fed to pigs. A recent study showed that the minimum infectious dose of ASFV in a single feeding was relatively high (10^4 TCID₅₀), but by calculation the authors estimated that the minimum infectious dose of ASFV in feed would decrease dramatically if pigs were fed the contaminated feed continuously as would be done in commercial production [2].

In contrast, a new publication [3] reported that ASFV added to unprocessed liquid porcine plasma that was mixed in feed and that feed provided daily for 14 consecutive days to 10 pigs at a minimum infectious dose ($10^{4.3}$ TCID₅₀/mL), that was higher than previously reported, did not cause ASFV symptoms or infection in various tissues. This same feeding study was repeated with a different group of 10 pigs provided an even higher dose of ASFV in the feed (10^5 TCID₅₀/pig/day) and again, after feeding for 14 consecutive days, none of the pigs developed fever or had ASFV genome in various tissues.

However, using the same pigs in both studies after they had been fed ASFV contaminated feed and did not get infected, the ASFV inoculated liquid porcine plasma was injected into the muscle of the pigs, or gavaged directly into the stomach of the pigs to determine if the ASFV liquid plasma could infect the pigs by a different route. All pigs injected with the ASFV spiked liquid plasma became infected with ASFV by genome detection in various tissues and developed fever. Some of the pigs gavaged with the ASFV-spiked liquid plasma became infected in various tissues. This demonstrated that the pigs could be infected by ASFV at high doses in the liquid plasma if it was intramuscular injected or gavaged directly into the stomach.

The conclusions from this new publication suggest that the minimum infectious dose of ASFV in feed is much higher than previously reported and that repeated exposures in feed did not result in a lower minimum infectious dose.

Much is yet to be learned about the potential risk of ASFV spread by contaminated feed or feed ingredients. However current information suggests the amount of ASFV contamination in feed needed to infect pigs is relatively high. Feed and feed ingredient suppliers using good manufacturing practices with high biosecurity standards should represent a very low risk of ASFV spread by contaminated feed or feed ingredients.

[1] Dee et al., 2018. PLOS ONE 13(3):e0194509.

[2] Niederwerder et al., 2019. Emerg Infect Dis. 25(5):891-897.

[3] Blazquez et al., 2020. Submitted to IPVS.