

Background:

- Aujeszky's disease virus (ADV) is an economically important virus of pigs spread through venereal, respiratory, and oral transmission
- Recent studies on ADV and other swine matrices suggest that contaminated animal feed could pose an incursion risk
- Great Britain (GB) is free from ADV

Risk Question

What is the likelihood of an incursion of Aujeszky's Disease Virus into Great Britain via contaminated imported animal feed?

Methods

Development of risk pathway; outlining the key steps for incursion of ADV via contaminated feed. Using available data, assess the likelihood and uncertainty for each step. Combine to give an overall estimate.

Pathway for incursion of ADV to Great Britain (GB) via imported feedstuffs

Very Low likelihood with **Medium** uncertainty

1.1 Exported feed is contaminated

- UK tends not to import feed from ADV positive countries
- No evidence for how ADV contaminates crops – other viruses used as proxies
- Processing of feed likely to destroy ADV

Very High likelihood with **Medium** uncertainty

1.2 Contamination not detected

- Visual inspection not sufficient to detect viral contamination
- No current requirements for virus testing of swine feed on import

Medium likelihood with **Medium** uncertainty

1.3 ADV survives transit

- Studies show that ADV can survive in feed matrices for 4-37 days, enough to survive transit^{2,3}
- The same studies found that virus level was reduced over this time period^{2,3}
- However these studies were proof of concepts with high initial dose and only one temperature/time combination

Very High likelihood with **Low** uncertainty

1.4 Contaminated feed comes into contact with susceptible animal

- It was assumed that animal feed is intended for animal consumption
- Mixing of feed from different sources means that a greater number of animals may come into contact with virus, albeit a lower dose

Very Low likelihood with **Medium** uncertainty

1.5 Animal in GB infected

- Dose response for ADV in pigs not well studied, especially from contaminated feed
- Any contamination of feed expected to occur at a low level
- It is unclear by what mechanism contaminated feed would infect pigs as no confirmed cases of natural ADV infection from contaminated feed have ever been reported

Data Gaps

- Conclusive evidence of ADV to contaminate feed
- Mechanisms of virus contamination of feed
- Dose response in relation to virus transmission from feed to swine
- How imported ingredients are sourced, processed, transported and, thus potentially contaminated prior to import

Conclusion

- Overall risk considered to be **Very Low** due to likelihood that feed is contaminated and that animals in GB become infected
- Lack of evidence of ADV contamination in feed
- Key data gaps for all steps due to few relevant papers, therefore risk estimate assessed to have **Medium** uncertainty

References:

- 1: EFSA (2006). "Scientific Opinion on Migratory Birds and their Possible Role in the Spread of Highly Pathogenic Avian Influenza." EFSA journal 357: 1-46.
- 2: Dee et al. Survival of virus pathogens in animal feed ingredients under transboundary shipping models. PLOS One (2018).
- 3: Stoian et al. Stability of classical swine fever virus and pseudorabies virus in animal feed ingredients exposed to transpacific shipping conditions. Transboundary and Emerging Diseases (2020)