

ASF EXPERT SERIES: HOW TO COMBAT THIS LONG BATTLE AND SUCCEED

SWINE



UPDATE ON THE CURRENT ASF SITUATION AND TRANSMISSION PATHWAYS THROUGH DIFFERENT MATRICES (PART 1/2)

“African Swine Fever Virus (ASFV) is unique due to its large and highly complexed DNA structure, and most of its functionalities are still unknown” The virus replicates in macrophages and therefore can avoid the immune system. Heat treatment at 70°C for 20 minutes or 60°C for 30 minutes inactivates the virus. The combined application of drying, heating, and lowering pH is an effective measure to control ASFV



Dr. Sandra Blome
Head, German National Reference Laboratories For African and Classical Swine Fever

APC has been organizing the “ASF Expert Series” webinar since last year in the Asian market to bring scientific experts to share the global status of ASF and explore some of the strategies to mitigate its impact

Introducing the theme for the webinar series Ramesh Subramonian, Director of Sales Asia Pacific, highlighted that the ASF pandemic will be a long-drawn battle in the Asian region; hence, it’s essential to have a long-term sustainable strategy in rebuilding the herds. He emphasized APC’s commitment to bringing the most recent information to the Asian market and will continue to offer prudent time-tested solutions that will help the pig industry.

In August, APC invited Dr. Sandra Blome, Head of German National Reference Laboratories for African and Classical swine fever. She talked about the current ASF situation globally and transmission pathways through different matrices.

“African Swine Fever Virus (ASFV) is unique due to its large and highly complexed DNA structure, and most of its functionalities are still unknown” The virus replicates in macrophages and therefore can avoid the immune system. Being an arthropod-borne (ARBO) virus, infectivity is bound to blood transmission. Without ticks, contagiousness is considered moderate; however, the infected animals usually die. After four days of infection, the most common clinical signs are high fever, reluctance to move, conjunctivitis, vomiting, diarrhea, somnolence, disoriented, seizures, and hemorrhages, which usually lead to death.

Under favorable conditions (moist and cool), ASFV can survive up to 10 days in feces, 70 days in blood at room temperature, 15 weeks in cooled ham, and years in frozen carcasses and pork. ASFV is stable during pH range of 4 to 11. Commercial disinfectants, organic acids, hypochlorite, iodine, quarter-nary ammonium compounds, and lime slurry are effective against the enveloped ASFV. Heat treatment at 70°C for 20 minutes or 60°C for 30 minutes inactivates the virus. The combined application of drying, heating, and lowering pH is an effective measure to control ASFV.

Despite some confusion, it is essential to note that ASF has no zoonotic potential. Its natural hosts are domestic pigs and Eurasian wild boars. Other hosts, i.e., African wild suids and soft ticks (genus *Ornithodoros*), are also causes of concern. ASF has its roots in Africa where it is transmitted in an ancient sylvatic cycle of ASFV is maintained by a cycle of infection involving warthogs and the soft tick vector *Ornithodoros moubata*. Ticks are infected by feeding on young warthogs, which develop transient viremia. Once introduced into the domestic pig population, direct and indirect contacts (swill feeding, feed matrices, bedding materials) are the primary transmission factors and poor biosecurity favors transmission. Oral infection through the feed is not easy but possible at a much higher virus we need 140,000 times more for reliable oral infection, this amounts to roughly 10,000 infectious units. Freshly cut grass and feed grains could be contaminated with slurry from affected holding and wild boar carcass in the area.

The article part 2 will be continued on next issue...





Dr. Javier Polo
Senior Vice-President
Global Research &
Development
APC

BIOSAFETY OF PLASMA AND DIETARY STRATEGIES TO MAXIMIZE EFFICACY OF PIG PRODUCTION

Dr. Javier Polo, Senior Vice-President Global R&D from APC, talked about the biosafety of plasma and dietary strategies to maximize the efficacy of pig production. He addressed spray-dried plasma produced by APC is functional, safe, and effective for use in animal feeds due to its stringent blood collection, testing, and multiple inactivation processes. Spray-drying to achieve a minimum of 80°C throughout substance is a recognized inactivation step for viruses, including ASFV. This method (Directive 2002/99/EC) has been validated to eliminate certain animal health risks in meat and milk for human consumption. Post drying heat treatment and an extended holding period at a minimum of 20°C for 14 days have been shown to inactivate several viruses, including ASFV. Compared to the sum of individual steps, these combined multiple processing steps are the most effective strategy to reduce and eliminate potential pathogens. To further enhance the safety of SDP, UV-C radiation of the liquid plasma before spray drying is a redundant safety step that can be applied. UV-C light targets nucleic acids and inactivates multiple classifications of bacteria and enveloped or non-enveloped viruses. Blazquez et al (2019) showed UV-C treatment of liquid plasma resulted in a log₁₀ reduction of PRRSV (>5.2), PEDV (>4.0), ASFV (>4.5), and the most heat-stable virus, PPV (>4.0). In theory, a combined treatment of spray-drying, UV-C, and storage at 20°C for 14 days could achieve >10 log₁₀ virus reduction.

PLASMA: SAFE PRODUCTS FOR PIGS

The manufacturing processes are approved and strictly controlled from one end of the chain to the other, guaranteeing the total safety of blood products, including plasma. Regulatory standards defined by European legislation are respected, mainly regulations (EU) 2017/893, (EU) 142/2011, and (CE) 999/2001, as well as guidelines and best practices defined by EAPA, the European Union Producers of Animal Blood Derivatives (www.eapa.biz).

Blood is only collected from healthy animals that will be slaughtered for human consumption; subsequently, the blood of various animals is pooled, contributing to a dilution effect. This grouping is recognized as a biosafety characteristic for human plasma products used for transfusions. Numerous studies confirm the effectiveness of the spray drying process at high temperatures (80 °C in all the material) to deactivate the viruses that affect the swine industry (European Directive 2002/99 / EC, Annex III), including the African swine fever virus.

8 Billion
PIGS FED GLOBALLY



#6 PLASMA RANKED #6 IN TOP 10 DISCOVERIES IN SWINE NUTRITION

Inactivation means that the virus is killed or that it cannot replicate.

Furthermore, all the treatment processes applied to plasma, particularly filtration and spray drying, make it a highly purified product, which no longer has anything to do with the initial blood matrix, in the same way as hydrolyzed proteins.

These standards and manufacturing processes can be compared to the production standards of other food industries, such as the milk powder industry. This ensures the use of highly qualitative, effective, and biologically safe ingredients in times of stress/challenge for the animal. The European Union Scientific Steering Committee (CSD) confirms in its report on animal products that blood products, of which plasma is a part, are not considered a source of recycling within of the species because of its manufacturing process. The explicit usage norms reflect this as per EU Regulation (EC) No. 1069/2009, by which blood products are allowed for monogastric farms, aquatic animal species, and non-productive animals.

References upon request.

For more information, contact the APC
Technical Service team or visit our website

