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News & Comments

Pigs are Effectively Protected against Erysipelothrix rhusiopathiae Challenge by the Swine Erysipelas Vaccine SER-ME

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Swine erysipelas (SE), which is brought on by the zoonotic bacterium *Erysipelothrix rhusiopathiae*, costs pig farms money. Pigs with *E. rhusiopathiae* infections might have acute, subacute, or chronic infections. The primary acute symptom is unexpected death due to sepsis or pregnancy loss. Spa binds to the phosphorylcholine on endothelial cells via its carboxyl-terminal domain, which shares structural similarities with the Cbps of Streptococcus pneumonia and contains repetitions of the amino acid's glycine and tryptophan. A single nucleotide polymorphism (SNP) site is a group of six locations in the spaA gene's hypervariable region. To test whether current inactivated vaccines were efficient at shielding pigs from infection with the Fujisawa reference strain, researchers employed SER-ME carrying *E. rhusiopathiae* Tama-96 as a representative.

The reference strain of *E. rhusiopathiae* was the Fujisawa strain. It was representative to use the 2012 Miyazaki variation, one of the main SpaA-type variants with M203/I257 SpaA-type. TPB medium was used to cultivate the 2012 Miyazaki variation and the Fujisawa strain at 37 °C. Blood and organ homogenates were grown on BHI agar plates with 400 g/mL of kanamycin and 25 g/mL of gentamycin as previously described to isolate *E. rhusiopathiae* from experimentally infected pigs. 16 pigs (LWD: Landrace, White Yorkshire, Duroc), each over 4 weeks old, were obtained from a conventional farm that was SE-free but did not provide any pigs with any anti-disease vaccinations. The vaccines were administered using SER-ME, a SE vaccine that is authorized in Japan. The immunizing component of SER-ME is the Tama-96 strain (serovar 2a) of *E. rhusiopathiae*. It is an oil-adjuvanted, inactivated SE vaccine. In *E. rhusiopathiae*, serum titers assessed using a commercial ELISA kit were unfavourable. In this study, the authors examined the effectiveness of the SER-ME vaccine, an oil-adjuvanted, inactivated SE vaccine, to see if the Tama-96 strain of *E. rhusiopathiae* (serovar 2a) in the vaccine was as effective against the serovar 1a Fujisawa strain of *E. rhusiopathiae* M203/I257 SpaA-type variant.

In addition to being present in sewage and soil, *E. rhusiopathiae* can also be found in wild animals. Even pigs that appear to be in good health and act as subclinical carriers are proven to have it. Therefore, it's critical to eradicate *E. rhusiopathiae* from the area around the pig homes by practicing proper hygiene and receiving frequent vaccinations. Even though this study indicates that the serovar 1a M203/I257 SpaA-type variant in Japan cannot be attributed to a lack of or ineffective vaccine-induced immunity, a heavy dependence on vaccination may lessen the value placed on everyday hygiene practices. We will further examine the pathogenicity of the variations because it is still unclear

why the M203/I257 SpaA-type variant of *E. rhusiopathiae* is currently the primary causal agent in outbreaks.

Source: Veterinary Sciences

KEYWORDS

Erysipelothrix rhusiopathiae; SpaA; swine erysipelas; variant; vaccine efficacy