

Antibodies to some swine diseases in commercial piggeries in Central Zambia

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Des échantillons de sang ont été prélevés sur 121 truies (jeunes et adultes) provenant de 7 porcheries commerciales situées autour de Lusaka (Zambie). Ils ont été reconnus négatifs pour la maladie d'Aujeszky, la gastroentérite contagieuse, la grippe porcine, la peste porcine classique et la brucellose. Soixante dix huit porcs provenant de cinq fermes ont réagi positivement au parvovirus porcine. Dix huit sérums se sont révélés positifs à *Leptospira celledoni*. **Mots clés** : Porc - Parvovirus porcine - Maladie d'Aujeszky - Gastroentérite du porc - Influenzavirus porcine - Peste porcine classique - Brucellose - *Leptospira celledoni* - Anticorps - Immunité - Zambie.

Introduction

Pig production in Zambia is carried out either under village conditions or on commercial pig farms. There are 156,000 indigenous domestic pigs mainly in villages of the Eastern (102,282) and Southern (30,091) provinces (1). In contrast only 5,200 sows, mostly Large White and Landrace are held in commercial piggeries in the Central, Copperbelt and Southern Provinces (4). The commercial pig industry is characterized by poor productivity with 12.8 piglets weaned per sow per year and serious losses in the immediate post-weaning period.

African swine fever is endemic in Eastern Zambia (9) and was diagnosed in Central Zambia in 1989. The disease status of the commercial swine herd has not been investigated and this paper reports a serological survey of selected diseases in commercial piggeries in the Lusaka area of Central Province.

Materials and Methods

Herds

In November 1989, blood samples were taken from 121 pigs kept on seven commercial piggeries serviced by the farm animal clinic of the Samora Machel School of Veterinary Medicine. The herds, all within 30 km of

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Lusaka had 1,200 sows in total. The disease status of these farms varied but infertility, poor fecundity, stillbirths, post-weaning scours, lameness, pneumonia and mastitis metritis agalactia syndrome (MMA) were commonly observed during three years of clinical involvement with the farms.

Sampling

Blood was collected, using a new 16 gauge needle for each pig, from the orbital venous sinus into a sterile 10 ml blood tube. The blood was allowed to clot and the serum was aspirated off and divided into two samples. One batch was heat treated at 58 °C for 40 min and then stored at minus 20 °C until despatched to the Central Veterinary Laboratory (Weybridge, U.K.) where viral serology was undertaken. The other samples were stored at minus 20 °C, until sent to the Veterinary Research Laboratory (Harare, Zimbabwe) where they were analysed for leptospirosis and brucellosis.

Serological tests

Serum samples were tested for antibodies to the following : porcine parvovirus using the haemagglutination inhibition (HI) test (11) adapted to microtitre plates ; Aujeszky's disease virus using an ELISA test (2) ; swine influenza virus H1N1 and H3N2 subtypes using the haemagglutination inhibition test (8) and transmissible gastroenteritis (TGE)/porcine respiratory corona (PRC) virus using the virus neutralization test as described by PATON (7).

The neutralization tests for pestivirus serology employed bovine viral diarrhoea virus (BVDV : strain Oregon C24V), hog cholera virus (HCV : strain Alfort) according to the method of WOOD *et al* (10).

The serum samples were tested for 18 *Leptospira* (L.) serovars namely *L. hebdomadis*, *L. mini*, *L. autumnalis*, *L. ballum*, *L. celledoni*, *L. cynopteri*, *L. canicola*, *L. icterohaemorrhagiae*, *L. pomona*, *L. grippotyphosa*, *L. tarrasovi*, *L. australis*, *L. bratislava*, *L. hardjo*, *L. bataviae*, *L. javanica*, *L. pyrogenes* and *L. shermani* using live antigens in the microscopic agglutination microtitre test (3).

The Rose Bengal test was used to examine the sera for *Brucella abortus* antibodies.

Results

Antibodies were not detected against Aujeszky's disease virus, TGE/PRC virus and *Brucella abortus*. Four sera demonstrated HI activity against swine influenza virus at dilutions of 1/10, three to H3N2 and one to H1N1. Two sera neutralized HCV infectivity at a final dilution of 1/10. Two other sera neutralized BVD virus at dilutions of 1/15 and 1/240. The remaining sera had titres of less than 1/10 to both HCV and BVDV. Seventy-eight pigs from 5 farms had positive titres (1/320) for porcine parvovirus. Two farms had no animals with positive PPV titres (1/100).

Communications

Eighteen sera showed positive titres for *L. celledoni*, three for *L. cynopteri* and one for *L. autumnalis* and *L. ballum*. No sera was positive for the other leptospire.

Discussion and conclusion

The absence of significant antibodies to Aujeszky's disease virus, TGE/PRC virus and hog cholera virus was not surprising as they have not been confirmed in South or Central Africa for many years. Pigs can become infected with non-hog cholera type pestiviruses probably by contact with ruminants (5). One of the pigs tested had a titre of 1/240 to BVDV suggestive of this type of infection. The TGE neutralization test detects antibodies to the new respiratory variant of the disease, porcine respiratory coronavirus as well as classical, enteric TGE. Since PRCV spreads very rapidly and had become endemic in Europe in a matter of years, the negative results are of interest.

Antibodies to swine influenza virus have been found in Kenya (6) but the situation in Central Africa is unclear. In the test used for swine influenza antibody titres 1/40 are considered to be reliably indicative of past infection. On that basis all of the sera tested were negative.

Porcine parvovirus is enzootic in most pigherds worldwide (6) and the presence of the virus in these herds is as expected. The antigen used in the Rose Bengal test was for *Brucella abortus* but as this cross reacts with *Brucella suis* the results would indicate that *B. suis* is not endemic.

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Blood samples were taken from 121 sows and gilts on 7 commercial piggeries located around Lusaka (Zambia). The samples tested negative for antibodies to Aujeszky's disease, transmissible gastroenteritis (TGE), swine influenza, hog cholera and brucellosis. Seventy-eight pigs from 5 farms had positive titres to porcine parvovirus. Eighteen sera showed positive titres to *Leptospira celledoni*. *Key words* : Swine - Porcine parvovirus - Aujeszky's disease - Transmissible gastroenteritis - Swine influenza - Hog cholera - Brucellosis - *Leptospira celledoni* - Antibody - Immunity - Zambia.

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