

### General Discussion on Swine Viral Diseases

**Chairman: Kumagai, T.** (Japan): Although Japan has been able to eradicate hog cholera, intensive vaccination policy is still maintained. It appears that in Thailand and in the Philippines the incidence of hog cholera is high probably, because of the rapid increase in swine production in these countries. Such a situation is reminiscent of the high incidence of the disease in Japan about fifteen years ago when swine production also experienced a rapid increase. The first topic for discussion will involve the diagnosis of hog cholera.

**Snowdon, W.** (Australia): I would like to make a comment with regard to the diagnosis of hog cholera. During the period 1920 - 1945, there were frequent outbreaks of hog cholera in Australia, mostly because the pigs were fed garbage from the ships. The disease was eradicated by quarantine and slaughter method. In 1962, in New South Wales there was an epidemic of low virulence. The disease was eventually eradicated by slaughtering the affected pigs. The diagnosis was difficult and required the use of serological methods. It was found that pigs had antibodies to hog cholera (HC) virus and to bovine viral diarrhea (BVD) virus, suggesting that there was a cross-reaction between HC virus and viruses belonging to the BVD group. I would like to know whether in Japan you have viruses belonging to the HC group or the BVD group still infecting pigs but not causing any disease.

**Shimizu, M.** (Japan): Neutralizing antibodies against BVD virus can sometimes be detected in the serum of non vaccinated pigs free from antibody against HC. Natural infection with BVD virus may occur among pigs in the field in Japan. However, the incidence of the infection with BVD virus is low in pigs.

**Snowdon, W.** (Australia): We have found that the older the animals the higher the proportion of those with antibodies to BVD. However, it appears that the level of antibodies to BVD is high relatively to the level of hog cholera antibodies. Pigs exposed to BVD virus have usually been resistant to challenge with virulent strain of hog cholera virus.

**Chairman:** Are there any comments on the control measures or vaccines applied against hog cholera?

**Rahman, A.** (Malaysia): The problems encountered in the control of hog cholera in Malaysia are related to the attitude of the people associated with the industry and not with the means of controlling the disease. For example, we have the small backyard farmers who refuse to vaccinate the pigs, the commercial farms which vaccinate the pigs only when there is an outbreak and the people involved in the marketing of pigs who do not always follow the instructions regarding vaccination. The disease thus tends to occur in cycles of 3 to 5 years. The vaccine used (GPE<sup>-</sup>) is locally produced or imported. This vaccine has been applied since 1973 and presently 50% of the pig population is being vaccinated.

**Ogata, M.** (Japan): What are the main technical problems for large scale production of vaccine in Thailand?

**Kongsmak, S.** (Thailand): The main technical problems for large scale production are: (1) As the vaccine stock produced is of low titer, it cannot be diluted to get more volume for final preparation, hence the quantity of vaccine produced is insufficient. (2) The laboratory is not well equipped for large scale production of cell cultures and the risk of contamination is high.

**Koh, J.G.W.** (Singapore): In Singapore we managed to produce the GPE<sup>-</sup> vaccine in 1975. The titer obtained was  $10^{5.7}$  TCID<sub>50</sub>/ml or above. We consider this titer as economically sufficient as we need only about 600,000 doses of swine fever vaccine annually. I would like to make an additional comment. Up to 1978, the farmers in Singapore who have the choice between the use of GPE<sup>-</sup> vaccine and the French vaccine (attenuated) preferred the GPE<sup>-</sup> vaccine (60% of them used the GPE<sup>-</sup> vaccine and 40% the French vaccine). In 1978, when the outbreak of pseudorabies took place, the farmers switched to the French vaccine as they thought that there might have been a relation between the use of GPE<sup>-</sup> vaccine and the occurrence of pseudorabies (presently 60% of the farmers use the French vaccine and 40% the GPE<sup>-</sup> vaccine). Has anyone encountered a similar situation?

**Rahman, A.** (Malaysia): In Malaysia, we achieve a titer of  $10^{5.7 \sim 5.9}$  TCID<sub>50</sub>/ml for GPE<sup>-</sup>. The virus appears to grow slowly on monolayers. We plan to boost our production. This year, we achieved a production of 225,000 doses whereas in the previous years only 100,000 doses/year were produced.

**Shimizu, Y.** (Japan): It is important to produce a high titer of virus and two factors must be considered. (1) The titer of antibodies against BVD virus in the serum used in the culture must be checked carefully. (2) A high titer of virus can be obtained if the guinea-pig kidney cell cultures are made confluent cell sheets.

**Chairman:** Are there any questions on pseudorabies?

**Inaba, Y.** (Japan): As you may know, cattle are very sensitive to pseudorabies virus. Have you observed the disease in cattle?

**Koh J.G.W.** (Singapore): We do not have many cattle in Singapore. We have recently observed an outbreak of pseudorabies in goats in a farm where goats were reared together with pigs. It was difficult to isolate the virus from the affected goats. Lesions in the brain of goats showed non-suppurative meningo-encephalitis.

**Joseph, P.G.** (Malaysia): Symptoms and lesions observed in pseudorabies are known to vary. In addition to the classical nervous signs, respiratory and intestinal forms may also occur.

**Rahman, A.** (Malaysia): In Malaysia, pseudorabies occurs only sporadically as pigs are not so concentrated. We are now using the French vaccine and we will observe whether there is a relationship between the type of vaccine and the occurrence of the disease.

**Kongsmak, S** (Thailand): Pseudorabies has been suspected for years in Thailand. In June of 1979, pseudorabies virus was isolated from a dead piglet by using PK-15 cell. The virus was confirmed to be pseudorabies virus by using fluorescent antibody and virus neutralization techniques with known anti-pseudorabies serum.

**Gupta, B.K.** (India): In India, hog cholera incidence is confined to a few outbreaks in the Northeastern border States (Nagaland and Mizoram). The rest of the country is free from the infection. We are using lapinized virus vaccine and we will be interested in taking up the production of GPE<sup>-</sup> vaccine with Japanese collaboration.

**Sudana G.** (Indonesia): In Indonesia, no cases of hog cholera or pseudorabies are recorded.

**de Alwis M.C.L.** (Sri Lanka): In Sri Lanka we have only a small population of swine confined to a few areas. We have not yet recorded any major epizootics and we have no reason to suspect the presence of either of these two diseases.

**Chairman:** More attention should be given to pseudorabies which is being more frequently reported in Europe and in the USA along with the increased pathogenicity of the virus.