VALUATION OF DURATION OF T. G. E. VIRUS SPREAD AMONG SOWS OF 2 INFECTED HERDS BY MEANS OF A SEROLOGICAL SURVEY OF ANTIBODIES PERSISTENCE

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Several works gave data about the excretion of Transmissible Gastro-enteritis (TGE) virus [1, 6]. In these studies, the persistence of the virus was investigated by trying to isolate it which is long, difficult and to often unsuccessfull. So, even if the virus is not found, it is difficult to conclude to its disappearance in an animal or in a herd. Serological survey is easier to undertake and, in this paper, the persistence of TGE neutralizing antibodies in sows sera is studied and the period of viral excretion in 2 herds is evaluated by the way of serological searches.

MATERIALS AND METHODS : Sera were examined for seroneutralizing (SN) antibodies as previously described [3, 5]. Firstly, in 2 breeding and fattening pig herds (A and B), the blood of three sows have been regularly collected and SN antibodies among some breeders have been studied from December 79 to November 80. The A Herd was affected by TGE in April 79 and the B Herd in October 78. After these two periods, clinical sign and contagious diarrhea, were not observed in these two herds. Between 78 and 80, the next herds were not affected by TGE.

Secondly, serological samples were performed on breeders at different ages in 2 pig herds (C and D). The C herd was affected by TGE in March 76 while the D one was affected by TGE in December 76. Each year, sera have been collected in the two herds on sows of different ages. Samples were not performed on the same sows. 450 sows were housed in the herd C and gilts were usually bred in the farm, except some young breeders occasionaly bought. 230 sows were housed in the herd D and gilts were always coming from a herd free of TGE. They were introduced in the farm when the animals were 6 months old.

RESULTS : In the A herd, 8 months after the TGE outbreak, the antibodies level is still high (Table 1) and appears constant as titers do not vary more than two or three dilutions. One year after the TGE outbreak, the results are similar in the herd B. So, one year, on average, after TGE infectious episod, the SN antibodies are persisting in the sera of the infected animals. Moreover, as shown in table 1, they are remarkably constant from December 79 to November 80. In March 77, in the C herd (one year after the TGE infection), all the sows except nulliparous and one multiparous, have TGE antibodies in their sera. The next year, the sows generally have farrowed two litters more and the primiparous, in 77, have farrowed, at least, 3 litters in 78. On the table 2, it appears that, in 78, only the sows which have farrowed three litters or more have TGE antibodies in their sera. Only two primiparous have antibodies in their sera but the origin of these sows is not clear and they probably had been bought in another herd. In 79, all the young sows which have farrowed four litters or less have no TGE antibody in their sera. In 77, the nulliparous were born in the farm and, in March, they were appoximately 8 to 10 months old ; so, they were born, between May and July 76, 2 to 4 months after the TGE outbreak. Absence of TGE antibodies in serum of these 14 nulliparous sows suggests that these animals were not infected. Among the primiparous, one was not infected at the contrary of the 8 others ; these 8 tested primiparous, in March 77 , were, at the moment of the sample, in the farrowing house ; so they were, at least, 11 months old and they were born in April 76, one month after the TGE outbreak ; they were nearly all infected.

In the D herd, in April 77, 3 on the 8 tested primiparous had TGE antibodies in their sera ; some of these primiparous could have been introduced in the farm 9 months earlier if they were at the end of their second gestation at the moment of the sampling and, at the most, 6 to 7 months earlier if they were at the beginning of their second gestation. Although they were present in December 76, 5 of the 8 primiparous tested in April 77 were not infected by the TGE virus. Always in 1977, none of the 7 tested nulliparous which were, at least, 7 months old and have been introduced for one month, were infected by TGE virus. In May 78, sows have farrowed two litters more than in 1977 and it appears clearly, on the table 2, that all the young sows which have farrowed less than 3 litters were not infected by TGE. In 1979, all the sows which have farrowed less than 5 litters were not infected by TGE.

DISCUSSION : The results of the survey show that TGE SN antibodies persisted at least two years with a quite constant titer. The results of the serological investigations in the herds C and D show that it is possible, by the serology, to date the moment of the infection of the herd, approximately and independently of the clinical signs, but also, to appreciate accurately the period of viral excretion. Of course for these deductions, the exact knowledge of the parity of the sows is necessary but just sufficient. In conclusion, SN antibodies persist along time (at least two years) in the serum of infected pigs. It seems that the TGE virus did not spread in infected herds more than 4 months. The cases of the C and D herds seem to be frequent as numerous examples, not described here, have been observed on the field.

SELECTED REFERENCES : [1] KEMENY L. J. et al. : Am. J. Vet. Res., 38, 307-310, 1977 ; [2] KEMENY L. J. et al.: Am. J. Vet. Res. 39, 703-705, 1978 ; [3] MORIN M. et al. : Can. J. Comp. Med. 42, 379-384, 1978 ; [4] TOMA B. et al. : Rec. Med. Vet. 152, 001-004, 1976 ; [5] VANNIER P. et al. : Rec. Med. Vet., 153, 103-108, 1977 ; [6] UNDERDAHL N. R. et al. : Am. J. Vet. Res. 36, 1473-1476, 1975.

TABLE 1 : Persistence of the TGE antibodies kinetic in the sows sera in two herds during 1 year

N° of sows		Months: Dec. 1979	Feb. 1980	March 1980	Sept. 1980	Nov. 1980
Herd A :	1	8	4	32	16	16
	2	128	ND*	256	128	512
	3	16	8	32	16	128
Herd B :	4	16	64	128	64	16
	5	16	8	16	8	4
	6	128	32	128	16	32

* Not Done

TABLE 2 : Number of sera with or without TGE antibodies according to the number of litters in two herds

Number of litters	Herd C: March 1977	Herd C: April 1978	Herd C: April 1979	Herd D: April 1977	Herd D: May 1978	Herd D: May 1979
0	0/14 ***	0/12	0/9	0/7	0/14	0/4
1	8/9	2/15	0/12	3/8	0/13	0/7
2	4/4	0/3	0/3	ND	0/9	0/4
3	20/21	1/5	0/9	ND	4/6	0/7
4	ND*	4/4	0/4	ND	5/5	0/5
5	ND	5/5	7/12	6/6	1/1	3/6
6	ND	3/3	0/1	9/9	1/1	5/5
7and more	ND	5/5	ND	ND	7/7	2/2

* Not Done

*** Number of Positive sera / Number of tested sera