PREVALENCE OF THE PORCINE EPIDEMIC DIARRHEA (PED) VIRUS IN THE PIG POPULATION OF DIFFERENT COUNTRIES.

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Introduction. The coronavirus-like agent CV 777 was isolated in 1977 from pigs with PED in Belgium. The name PED virus has recently been proposed (1). A syndrome with clinical signs similar to PED is also observed in England, Germany, Holland and Hungary. A serosurvey was performed to determine how long this virus has been present in the Belgian swine population and to establish its distribution throughout the world.

Methods. Sera had been collected at different Belgian slaughterhouses from 460 sows and 276 pigs (+ 100 kg) over a period of 12 years. An enzyme linked immunosorbent assay (Elisa) was developed for the detection of antibodies against the CV777 isolate of PED virus (2). This test is based on the blocking by unknown sera of the specific reaction between PED virus and its horseradish peroxidase-conjugated homologous hyperimmune serum. Sera were screened at a 1:5 dilution. Sera which reacted positive were further diluted to determine the endpoint titer.
Sow sera from different European, Asian and American countries were collected at random to be representative for the local swine population, and were mailed to our laboratory. These sera were tested as described above.

Results. The results of the serosurvey are shown in tables 1 and 2. Previous experiments with the Elisa blocking assay had shown that a 50% blocking of the normal extinction by a 1:5 diluted pig serum was associated with the presence of antibodies to PED virus in that serum. Therefore, antibody titers of ≥ 5 were considered to be specific and positive.

Discussion and conclusions. Antibodies to PED virus are detected in Belgian sow sera starting from 1971. This coincides with the first observations in the beginning of the seventies of a new form of porcine epizoötic diarrhea different from TGE (1).
About two thirds of sow sera collected in 1980 were negative for antibodies against PED virus. This is similar to the situation of TGE in Belgium and accordingly, epizoötic outbreaks of PED on swine breeding farms may be expected every year.
Sera collected from slaughterpigs showed that the % of positive animals varies from season to season. This may be a reflection of the observation that PED, like TGE, occurs more often during winter (jan.-april) than in summer. Based upon that finding, we asked for sow sera for the world-wide serosurvey to keep bias due to season influences as low as possible.
The results in table 2 indicate that PED virus or an antigenically closely related virus is widespread in Europe, with the exception of Scandinavia and Ireland. Sera from Hungary were negative although a PED-like form of diarrhea has been described, associated with coronavirus-like particles, antigenically different from TGE (3).
Sera collected from pigs in Taiwan also contain antibodies to CV777, indicating that the distribution of PED virus goes beyond the European continent.
The Northern American swine population seems to be free of PED virus. The same observation is made for Australia.

We are indebted to colleagues of different continents mentioned in table 2 for their kind coöperation in collecting and mailing the sera. The financial support of I.W.O.N.L. Brussels is gratefully acknowledged.

References : 1. Pensaert M. et al. (1982) IPVS proc. Mexico. 2. Callebaut P. et al. Veterinary Microbiology, in press.
3. Horvath I. and Mocsári E. (1979) Magyar Állatorvosok Lapja 34: 819-825.

Table 1 : Presence of antibodies to PED virus in Belgian swine sera in relation to the year and season of serum collection.

Origine of sera		Number tested	Number positive (%)
Sows	1969	80	none
	1971	63	7 (11)
	1975	107	45 (42)
	1980	210	68 (32)
Pigs (+ 100 kg)			
	August	177	83 (47)
	December	99	6 (6)

Table 2 : Distribution of PED virus throughout the world as shown by the presence of antibodies in sow sera collected in different countries.

Country	Sera obtained from	Number tested	Number (%) positive	Remarks
Germany	D. PRAGER - Arnsberg	84	12 (14)	
Germany	G. HESS - Munich	58	13 (22)	
Germany	SCHMITTDIEL - Oberschleissheim	64	18 (28)	
France	P. VANNIER - Ploufragan	150	40 (27)	
Holland	van EXSEL - Boxtel	100	19 (19)	
Bulgaria	G. TATAROV - Sofia	60	41 (68)	only 1 herd (5000 sows)
England	M. BANKS - Weybridge	104	9 (9)	pigs of different ages
Taiwan	R.M. CHU - Chunan Miaoli	38	10 (26)	
Sweden	G. HUGOSON - Uppsala	50	none	boar sera (7m - 3 years)
N. Ireland	M. S. Mc NULTY - Stormont	45	none	
USA Iowa	G. N. WOODE - Ames	104	none	
USA Ohio	E. BOHL - Wooster	30	none	22 adult pigs
Australia	S. TZIPORI - Westmeadows Vict.	60	none	30 sows, 20 gilts
Hungary	E. MOCSARI - Budapest	47	none	