

ウマウイルス性動脈炎に関する研究2

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BRIEF NOTE

Studies on Equine Viral Arteritis

II. A Serological Survey of Equine Viral Arteritis in Horses Imported in 1973/74

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Equine arteritis virus (EAV) strains have been isolated only in U.S.A. [4], Switzerland [1] and Austria [2]. Serological evidence suggested that the disease might have occurred in Italy [3], India [8] and several European countries [5, 7, 9]. The presence of antibody against EAV has not been shown so far in horses in Japan. There is a great possibility, however, for invasion of EAV in Japan, since importation of horses from contaminated countries has increased recently. Therefore, it is considered pertinent to survey the prevalence of antibodies against EAV in the serum of imported horses at quarantine.

This report presents the results of a serological survey of EAV conducted on serum samples collected from 140 horses imported into Japan in 1973/74.

In the plaque reduction neutralization test, the Bucyrus strain of EAV was used. The method employed here has been described in detail elsewhere [6]. A virus suspension containing 100–200 PFU/0.1 ml was mixed with an equal volume of each of 1 : 5 dilutions of serum previously heated at 56°C for 30 minutes. After incubation at

37°C for 1 hour, a mixture of virus and serum was inoculated into 3 dishes of Vero cell culture in an amount of 0.2 ml. After incubation at 37°C for 5 days, the dishes were stained with methyl violet-formalin. The antibody titer was expressed as a reciprocal of the highest serum dilution reducing the plaque count by at least 50%.

The survey was conducted on 140 horse serum samples obtained from the Animal Quarantine Service, Ministry of Agriculture and Forestry, Yokohama, Japan, during a period of 1973 to 1974. The initial serum was prepared at the time of importation, and the second serum specimen obtained 7 days later.

The results are summarized in Tables 1 and 2. Neutralizing antibodies were recognized only in horses imported from U.S.S.R., Germany (via U.K.) and France. The overall incidence of neutralizing antibody-positive horses was 8.6% when determined in the 140 samples collected in the present survey. Of the 140 horses, 38 were born and raised in U.S.S.R. Of them, eight possessed neutralizing antibody. Serum samples from seven horses born in Rostov Province,

Table 1. Survey of neutralizing antibody against EAV in horses imported from various countries

Country of birth	Country of export	No. tested	No. positive
U. S. S. R.	U. S. S. R.	38	8
Germany	U. K.	5	3
France	France	13	1
France	U. K.	1	0
Italy	U. K.	1	0
U. K.	U. K.	16	0
Ireland	U. K.	24	0
Spain	Venezuela	8	0
Argentina	Brazil	1	0
Iraq	Iraq	2	0
U. S. A.	U. S. A.	10	0
New Zealand	Australia	1	0
Australia	Australia	20	0
Total		140	12

U.S.S.R., showed an antibody titer of 1 : 10. One horse born in Moscow Province had a titer of 1 : 40. Of five horses born in Germany and exported from U.K., three possessed a neutralizing antibody titer of 1 : 5. Of thirteen horses born in and imported from France, only one revealed a titer of 1 : 5. There was no difference in titer between the initial and second sera. As is evident from Table 2, the positive horses had nothing in common with age, sex or breed.

Up to date the authors had supposed that no EAV might have spread among horses in Japan [6]. In the present work, however, it was ascertained that other than horses imported from Germany (via U.K.) and France, those imported from U.S.S.R., where

the occurrence of the disease has never been known, had also antibody against EAV. Nevertheless, it is presumed that there may be little possibility for the virus to have invaded horses in Japan, because these imported horses positive for neutralizing antibody do not always harbor the virus. As a matter of fact, although no trial was made to isolate the virus, the positive horses appeared to have low antibody titers, in which there was no difference between the initial and second sera. The antibody-positive horses and their neighbors were in good health conditions when subjected to continual clinical observation by the Animal Quarantine Service. Recently, importation of horses from overseas has remarkably increased. Therefore, it is highly possible for the virus to invade horses in Japan from now on. A new method may be necessary for the rapid and exact diagnosis of the disease.

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Table 2. Neutralizing antibody titer of positive reactors

Country of birth	Country of export	Number positive	Age (years)	Sex	Breed	Titer
U. S. S. R.	Moscow	1	9	Male	Oulousky	1 : 40
	Rostov	7	4-7	Male	Budeney, Don and mixed	1 : 10
Germany	U. K.	3	3-4		Westfal	1 : 5
France	France	1	10	Female	Thoroughbred	1 : 5
Total		12				

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