



Title	A SEROLOGICAL SURVEY OF CATTLE AND SMALL WILD MAMMALS FOR EVIDENCE OF TICK-BORNE ENCEPHALITIS VIRUS INFECTION IN HOKKAIDO, JAPAN
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**A SEROLOGICAL SURVEY OF CATTLE AND SMALL WILD  
MAMMALS FOR EVIDENCE OF TICK-BORNE  
ENCEPHALITIS VIRUS INFECTION  
IN HOKKAIDO, JAPAN**

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Sera from cattle and small wild mammals in various regions of Hokkaido during 1978-1979 were tested for a neutralizing antibody against Negishi virus of the tick-borne group B complex.

The results were summarized as follows:

1) Antibody to Negishi occurred in 22 (0.6%) of 3,535 cattle sera collected from 47 districts from May to November, 1978. The positive sera were found in 13 districts scattered within four different areas; the northern (Teshio, Nayoro and Monbetsu), the central (Rumoi, Sapporo and Tomakomai), the western (Iwanai, Muroran and Kuon) and the eastern (Kushiro and Shibetsu). The positive rate ranged from 0.9% to 1.1% in the areas, but varied up to 8.3% maximum in the positive districts. No positive sera were detected, however, in Oshima peninsula, Tokachi and Abashiri regions. From these results, it was suggested that the infected habit might be extremely focal even in the endemic areas.

2) Negishi neutralizing antibody titer was as low as 1:5 in 15 (68%) of 22 positive sera, and the titer of 1:40 or more was found only in 3 sera.

3) Negishi positive sera were tested against 3 flaviviruses, Langat (tp-21), Apoi and JaGAR-01 strain of Japanese encephalitis virus. Antibodies specific to Negishi or Negishi and Langat of the tick-borne virus complex occurred in 8 sera in all 4 endemic areas. One cow from the western area was found to have high-titer antibodies against Negishi (1:320) and Langat (1:160). Apoi virus-specific antibody was found in only one cow in the central area, but neither Japanese encephalitis nor Langat specific antibody was detected. Antibodies cross-reacting to Negishi and Apoi occurred in 5 of 7 Negishi positive sera detected in the northern area. On the other hand, cross-reactors between Negishi and Japanese encephalitis were found, one each in the eastern and the central areas. Therefore, there was a possibility that flaviviruses other than those four viruses employed for testing might be existing in northern Hokkaido.

4) Sera from 545 small wild mammals caught in 7 different districts during the summers of 1978 and 1979 were examined for neutralizing antibody to Negishi virus. The positive serum was obtained from one of 54 *Celthronomys rufocanus bedfordiae*

collected in Biei district near Mt. Tokachi in the central area. The antibody titer was 1:10 to Negishi, but was not tested to other flaviviruses.

**EXPERIMENTAL STUDIES ON BLOOD TRANSFUSION INTO  
DOGS BLOOD GROUPS  
AND  
CLINICAL AND HEMATOLOGICAL FINDINGS ON  
TRANSFUSION USING ERYTHROCYTES**

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The blood groups in dogs were studied to make a basic investigation of the clinical blood transfusion in dogs. Immune antibodies were produced in dogs and goats by repeated infusions of canine erythrocytes. The blood groups of one hundred thirty-six random mongrel dogs caught in Sapporo were examined.

Furthermore, for the purpose of observing the clinical and hematological findings produced in dogs by the transfusion of incompatible erythrocytes, a 45% suspension of canine compatible or incompatible erythrocytes in physiological saline solution was transfused into dogs twice at 10-day intervals. The amount of cell suspension transfused was equivalent to 15 percent of the total blood volume.

The following results were obtained :

1) Four types of antibodies obtained from the dogs were tentatively designated as anti-S<sub>1</sub>, S<sub>2</sub>, S<sub>3</sub>, and S<sub>4</sub>. One type of antibody obtained from a goat was tentatively designated as anti-Sg.

2) The incidence of antigens S<sub>1</sub> through Sg among the 136 dogs was as follows: antigen-S<sub>1</sub> 72.1% ; S<sub>2</sub> 41.2% ; S<sub>3</sub> 22.8% ; S<sub>4</sub> 69.9% ; and Sg 48.5%.

3) The incidence of combinations of blood group antigens was as follows: 12.5% of all of the examined dogs had none of these 5 blood typing antigens; 17.0% had only one antigen; 17.6% had two antigens; 19.1% had three antigens; 24.2% had four antigens; and 9.6% had all of these antigens.

4) Twenty kinds of combinations were observed in these 136 dogs. The highest frequency was 19.8% observed in the combination S<sub>1</sub> S<sub>2</sub> S<sub>4</sub> Sg, and the lowest frequency was 0.7% observed in the combination S<sub>1</sub> Sg, S<sub>1</sub> S<sub>2</sub>, S<sub>3</sub> S<sub>4</sub> Sg, and S<sub>1</sub> S<sub>3</sub> S<sub>4</sub> Sg.

5) After the first transfusion, there was no difference between the compatible and incompatible erythrocytes transfusion in the clinical findings. After the second transfusion, however, one fifth of the dogs transfused with the incompatible erythrocytes showed clinical findings of intensive shock.