ANTIGENIC ANALYSIS OF HEMORRHAGIC FEVER WITH RENAL SYNDROME (HFRS) VIRUSES AND SEROLOGICAL ASSAYS FOR HFRS VIRUS ANTIBODIES IN SERA FROM *RATTUS NORVEGICUS*

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Serological classification of hemorrhagic fever with renal syndrome (HFRS) viruses was made. In addition, several kinds of serological assays, enzyme-linked immunosorbent assay (ELISA), indirect fluorescent antibody (IFA) test, immune adherence hemagglutination (IAHA) test and neutralization (NT) test, were developed for the sera from rodents of Rattus.

The HFRS viruses used for antigenic analysis were 5 strains, which included SR-11, TB-314 and KI-262 strains (*Rattus norvegicus* orgin, Japan), Hantaan-76-118 strain (H-76-118, *Apodemus agrarius coreae* origin, Korea) and Prospect Hill virus MP-40 strain (MP-40, *Microtus pennsylvanicus* origin, U. S. A.).

The results were summarized as follows:

1) In IFA and ELISA tests using immune sera prepared in rats against each strain, high cross-reactivities were observed among 3 *Rattus*-borne HFRS virus strains and *Apodemus*-borne virus strain.

2) In the IAHA test, one-way cross-reactivities were observed between *Rattus*-borne virus strain and *Apodemus*-borne virus strain.

3) In the NT test, no cross-reactivities were observed between virus strains from different host species (*Rattus, Apodemus* and *Microtus*). Thus, the 5 virus strains could be classified into 3 serotypes: *Rattus*-borne type, *Apodemus*-borne type and *Microtus*-borne type.

4) In the western blotting assay, major polypeptides of ca. 50 kilodaltons (K) and 57K were detected in the *Rattus*-borne virus strains, those of ca. 50K and 55K in the *Apodemus*-borne virus strain and ca. 40K, 58K and 62K in the *Microtus*-borne virus strain with each of the homologous antisera.

5) Four monoclonal antibodies against SR-11 strain were produced. In the cross IAHA test using these antibodies, one of the monoclonal antibodies had common reactivities against SR-11 and TB-314 strains, but none to KI-262 strain.

6) In the sera from 4 rats experimentally infected with SR-11 strain, ELISA-IgM antibody was first detected on the early days, by days 5 or 7, after virus inoculation, reached the peak titer by days 5 or 10 and faded away rapidly. ELISA-IgG antibody titer also appeared in the early stage, rose rapidly and was maintained at high titers. Neutralizing antibody was detected on the early days and increased gradually up to 7 weeks, the last time tested.