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AVIDIN-BIOTIN SANDWICH ENZYME-LINKED IMMUNOSORBENT ASSAY
(ABS-ELISA) FOR THE DETECTION OF HEMORRHAGIC FEVER
WITH RENAL SYNDROME (HFRS) VIRUS ANTIGEN

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Sandwich enzyme-linked immunosorbent assay (S-ELISA) using avidin-biotin (AB) was newly developed to detect hemorrhagic fever with renal syndrome (HFRS) virus antigen. Anti-HFRS virus antibody as a capturing antibody (Cap. Ab) was fixed on the wells of a microplate and reacted with antigen. Biotinylated antibody was added to the wells as a detector antibody (Det. Ab), followed by peroxidase-labeled avidin and azino-di-(3-ethylbenzthiazthiazolic sulfonic acid). HFRS antigen was detected in the suspension of the organs from infected animals.

The results were summarized as follows :

- 1) As Cap. Ab to detect HFRS antigen, monoclonal antibody was found to be more sensitive than polyclonal antibody. Prozone phenomenon was seen in the high concentration of Cap. Ab against a constant level of antigen dilution. Absorbance value was constantly high at the range of 10^{-1} to 10^{-4} of Cap. Ab dilution and declined at further dilutions.
- 2) Absorbance value decreased in accordance with antigen dilution against the constant concentration of Det. Ab, and a clear dose-response curve was obtained.
- 3) Sensitivity of ABS-ELISA was almost the same as that of indirect ABS-ELISA, which used the secondary antibody. However, the level of non-specific reaction of ABS-ELISA was clearly lower than that of indirect ABS-ELISA. Absorbance value in the antigen control of ABS-ELISA was less by about 0.1 than that of indirect ABS-ELISA.
- 4) Suckling rats of less than 24 hr of age were inoculated intraperitoneally with SR-11 strain. Detection of antigen from the suspension of their organs was attempted by ABS-ELISA at intervals. In the lung suspension, antigen was detected at 6 days after virus inoculation and antigen titers were 1:32 to 1:64. In the brain suspension, antigen titers were 1:2 to 1:4 at 12 days after inoculation, and 1:32 at 16 days after inoculation. Furthermore, even in the presence of IFA antibody, the antigen was preserved in the organs of these rats for a long time. Rise of serum antibody titer was observed in a mother rat which was kept with infected suckling rats.
- 5) Detection of antigen was attempted by ABS-ELISA from the lung suspension of *Rattus norvegicus* rats captured in an endemic focus of HFRS. Antigen was detected in 6 of 26 rats, and IFA antibody titers were negative (less than 1:32) in 4 of the 6 antigen positive rats.