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| Title | INDUCTION OF CELLULAR DNA SYNTHESIS AND EVIDENCE OF INCREASING AFFINITY BETWEEN THE NUCLEAR MEMBRANE AND DNA IN THE CELLS INFECTED WITH INFECTIOUS CANINE HEPATITIS VIRUS |
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Sex resistance was not confirmable. Differences between the control and cortisone-treated groups were not remarkable, but the progress of organization was faster and the accumulation of cell elements was more active in the former.

**INDUCTION OF CELLULAR DNA SYNTHESIS AND EVIDENCE
OF INCREASING AFFINITY BETWEEN THE NUCLEAR
MEMBRANE AND DNA IN THE CELLS INFECTED
WITH INFECTIOUS CANINE HEPATITIS VIRUS**

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The incorporation of ³H-Thymidine into cellular and viral DNA was estimated in cells during the course of infection with canine hepatitis virus (ICHV), which has been known to be oncogenic to new-born hamsters. The separation of cellular and viral DNA was carried out according to HIRT (1967). In dog kidney cells (DKC) infected with ICHV, cellular DNA synthesis was induced 3 times and a considerable amount of viral DNA (almost equal to the amount of the induced cellular DNA) was synthesized. In hamster embryo cells (HEC) infected with ICHV, cellular DNA synthesis was induced 5 times and a small amount of viral DNA (1/3 of the amount of the induced cellular DNA) was synthesized.

The difference in the amounts of synthesized cellular and viral DNA between DKC and HEC suggest the existence of a newly synthesized factor which regulates the rate of the synthesis. The role of the nuclear membrane in the DNA synthesis was then studied, since it has been reported recently that DNA synthesis was initiated at the nuclear membrane. The nuclear membranes of the infected and uninfected DKC were mixed, in the presence of Mg²⁺ K⁺ ATP, with ³H-labelled ICHV- and DKC-DNA. The nuclear membranes of the infected DKC were found to have more affinity with ICHV- and DKC-DNA than those of the uninfected DKC. The increased affinity of the infected DKC leads the author to suppose that the newly synthesized factor appears in the nuclear membrane. A series of protein synthesis which is necessary for the DNA synthesis was found to be completed 10~12 hours after infection by using puromycin. In this period of time, protein synthesis were noticeable in fractions of the nuclear membrane soluble in 0.6M NaCl and insoluble in 2M NaCl. The relationship between the protein and its affinity to DNA, however, was not elucidated.

From the above results, the induction of cellular DNA synthesis and the increasing affinity between nuclear membrane and DNA in the cells infected with ICHV were confirmed, and the role of the nuclear membrane in the synthesis of viral and cellular DNA in the ICHV-infected DKC was concluded.

CLINICAL AND HEMATOLOGICAL OBSERVATIONS ON EXPERIMENTAL REPEATED BLOOD TRANSFUSIONS IN HORSES

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The blood transfusion was carried out on 4 normal horses at the rate of 2 ml per kg from different 4 normal horses every day, every other day, or 6~8 days apart and the resulting physical conditions were examined clinically and hematologically. These are summarized as follows.

1) Transfusion reactions with hemoglobinuria, such as icteric coloration of the visible mucous membrane, accelerated breathing, increase of pulse rate, accelerated peristalsis, pyrexia, sweating, and lying down, were obvious after an average of 52 days (8~72 days); that is, at the 16th (the 6~20th) transfusion on the average. Such reactions disappeared within 24 hours after the transfusions.

2) The fluctuations in the red blood cell count, Zschokke's value, the hematocrit reading and the hemoglobin value were closely related. At the beginning of the experiment, these values increased, but after the initial increment they decreased to those of before transfusion.

3) There were no significant changes related to the transfusions in either the total or the differential leukocyte count or in erythrocyte fragility throughout the entire experiment.

4) Sideroleukocytes began to appear after 19 days (6~30 days) on the average, that is, at the 9th (4~13th) transfusion on the average, and then constantly increased with each blood transfusion.

5) Erythrophages were observed in the middle and terminal stages of the experiment for all recipients.

6) Icterus index and serum bilirubin value constantly increased. However, their changes were not abnormal.

7) The values of SGOT, SGPT and blood urea-nitrogen remained at normal