mulation of NFs in the distal part of the axons and Quv quail lacking NFs may not be affected with the distal axonopathy. Alternatively, because Quv quail died or were euthanatized after a short treatment period, acute neurotoxicity may not have had time to develop.

To investigate the possibility that the absence of the distal axonopathy in Quv quail might be due to the shortness of the treatment period, a lower dose of 2,5-HD (175 mg/kg per day) was administered for a long term (24 weeks) to normal and Quv quail. Some treated normal quail had central-peripheral distal axonopathy. In contrast, distal axonal degeneration did not appear in any Quv quail. These results indicated that distal axonal degeneration did not occur without NF accumulation. In conclusion, NF accumulation is an essential factor in the development of distal axonopathy in $\gamma$-diketone neuropathy.


Studies on latent infection, and immediate early and early protein gene of canine herpesvirus

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Canine herpesvirus (CHV), belonging to the subfamily Alphaherpesvirinae, causes a fatal hemorrhagic disease in neonatal pups, and usually subclinical infection in the respiratory and genital tracts in adult dogs. The virus remains latent in convalescent dogs and stress or immunosuppression leads the virus to reactivate. Asymptomatic excretion of the reactivated CHV usually occurs and pose risks for transmission of the virus, causing neonatal mortality in breeding kennels and the spread of CHV infection. It is, therefore, important to clarify the mechanisms of latency and reactivation of the virus.

To provide information on the latency and reactivation of CHV, the virus was inoculated into female adult dogs via different routes. In situ hybridization analyses on tissues of the convalescent dogs revealed that the latent CHV harbored in the nuclei of the trigeminal ganglionic neurons and the retropharyngeal lymphocytes. Northern blot hybridization and reverse transcription-PCR analyses on the latently infected tissues demonstrated that the latency associated transcript (LAT) of CHV was an approximately 6kb RNA and generated as an antisense transcript to the immediate early (IE) and early (E) genes of the virus. Thus, the CHV LAT was suggested to be involved in the latency and reactivation.

To define the structure of the CHV IE and E proteins, the inverted repeat region and its vicinity linked to the unique long region of the genome were cloned and sequenced. The IE protein was predicted to consist of 1,383 amino acids. The amino acid sequence suggested that CHV IE protein was a homologue of the infected cell protein 4 (ICP4) of herpes simplex virus 1 (HSV-1) which played an important role in viral gene expression as a transactivator. The gene flanking downstream the IE protein gene was transcribed in the E phase and encoded the ICP0
homologue of HSV-1 (CICP0), consisting of 333
amino acids. The deduced amino acid sequence
contained RING finger and acidic transcriptional
activation domain, suggesting that CICP0 func­
tions as a transcriptional regulatory factor.

Alphaherpesviruses remain latent in host
cells as genomes after the primary infection and
escape host immune responses. Further inves­
tigations on the mechanisms of latency and
reactivation of CHV would provide information on
strategies to control herpesvirus infections.

Detection of canine herpesvirus DNA in the ganglionic neurons and the lymph node lymphocytes of latently

Basic study of the application of high-magnetic field
MRI to rats and mice as small laboratory animals

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MRI of small laboratory animals such as rats
and mice required for a high-magnetic field and a
strong gradient-magnetic field to visualize the
detailed structures in their tissues and organs
since they must be imaged by small voxels with
strong signals and high S/N ratios. In the
present study, MRI using an Oxford 7.05 T
superconducting magnet (higher than those for
usual MRI, 0.2-2.0 T) was, therefore, applied to
the visualization of copper-induced hepatitis and
hepatocellular carcinoma (HCC) in Long-Evans
Cinnamon (LEC) rats, as well as the topograph­
cal structure of mouse brain. Before MR imaging
of LEC rat liver, the effects of an excess amount
of paramagnetic ions in tissue and the high
magnetic field on not only the chemical shift of
liver protons but also their T1 and T2 relaxation
times were first examined to adjust an MRI
machine to the suitable condition, since an excess
amount of paramagnetic ions (40-50 times higher
than those of normal rats) was present in the liver
of LEC rat. Then, MRI using a gradient coil of
0.3 mT/cm was carried out under 7.05 T to image
the livers of rats showing acute and chronic
hepatitis, and HCC. In the case of mouse brain,
MRI using the extremely strong gradient coil (3.5
mT/cm) was carried out under 7.05 T to visualize
its topographical structure.

When the effects of paramagnetic ions under
the high magnetic field on the chemical shift of
protons in the liver containing a high amount of
paramagnetic ions were examined by magnetic
resonance spectroscopy (MRS), it was found that
(1) MR signal was mainly arisen from water
protons, and (2) the chemical shift position of the
protons was not different from that of Wistar rat,
suggesting that the width and strength of pulse to
excite the protons in the liver of normal Wistar
rat was applicable to MR imaging of the LEC rat
liver. MRS was also employed to measure the