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A STUDY ON EXPERIMENTAL INFECTION OF ARTHROPODS
WITH FLAVIVIRUSES IN THE PAN-PACIFIC REGION

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Experimental infection of arthropods with viruses is usually undertaken with one of three objects :

- (1) To evaluate the ability of a particular species of arthropod to serve as a vector of a virus which causes damage to humans or economically important animals.
- (2) to study the interactions of virus with an intact arthropod host.
- (3) To detect, quantitate, and identify viruses.

In this study, the sensitivities of several flaviviruses to arthropods which inhabit Hokkaido were examined. Interference between two flaviviruses in *Culex (C.) tritaeniorhynchus* was also investigated.

1. The following three cases of experimental infection were examined to evaluate the ability of the arthropods to be as vectors of given viruses. (1) *Aedes (Ae.) japonicus*, *C. pipiens pallens* and *Tripterooides bambusa* vs. Apoi virus, (2) *Ae. japonicus* vs. Negishi virus or 3-Arch virus and (3) *Laelaps echidninus* vs. Apoi virus or Japanese encephalitis (JE) virus.

In all the cases, virus replications were not observed, and these arthropods were considered to be nonsusceptible vectors for these viruses.

2. The interaction of two kinds of flaviviruses was investigated in colonized *C. tritaeniorhynchus* dually infected with WN virus and JE virus or with JE strain JaGAR-01 and Nakayama.

In both cases, virus replications were inhibited in the subjects secondarily infected. In contrast, virus replications were not affected in those primarily infected.

3. The PAP method was confirmed to be as useful as the IFA-focus method for quantitating viruses in intact mosquitoes. The most suitable incubation time at 37° C was 24–28 hours for strain JaGAR-01, and 20–24 hours for Nakayama strain.