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Source: Journal of Wildlife Diseases, 9(1) : 2-3

Published By: Wildlife Disease Association

URL: https://doi.org/10.7589/0090-3558-9.1.2

SURVEY FOR ANTIBODIES TO CANINE VIRUSES IN SELECTED WILD MAMMALS[1]

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Abstract: Sera derived from skunks, raccoons, opossums and woodchucks trapped in Maryland were examined for neutralizing antibodies to infectious canine hepatitis, canine distemper, canine herpes, and parainfluenza SV-5 viruses. Neutralizing antibodies to infectious canine hepatitis, previously found in skunks in the area, were demonstrated in 6 of 50 raccoons. Sera from 2 of 25 skunks and 21 of 25 raccoons had canine distemper neutralizing antibodies. Infectious canine hepatitis and canine distemper antibodies were not demonstrable in sera of 25 opossums and 9 woodchucks. No neutralizing antibody to canine herpes or SV-5 virus were found in any of the sera tested.

INTRODUCTION

During the course of a survey of Maryland wild mammals for selected infectious diseases, infectious canine hepatitis (ICH) virus was recovered from two skunks *(Mephitis mephitis).* Moreover, significant neutralizing antibodies for ICH were demonstrated in 63% of 94 skunks. These findings prompted additional examinations for canine adenovirus antibodies in sera from raccoons *(Procyon lotor),* opossums *(Didelphis marsupialis),* and woodchucks *(Marmota monax)* which were trapped from the same area and during the same period the skunks were collected. In addition, the wildlife sera were tested for presence of antibodies to other viruses, viz, canine distemper (CD), canine herpes and parainfluenza SV-5, which are commonly found in dogs.[3]

MATERIAL AND METHODS

Sera: The collection of the serum specimens are described elsewhere.[1]

Neutralization tests: The neutralization tests were done as previously described.[2] Primary dog kidney cells were used for the neutralization tests with ICH, canine herpes and parainfluenza SV-5 viruses. Embryonated eggs were used for the CD neutralization tests. In each test approximately 100 infectious dose$_{50}$ of virus were used. Initial screen tests were performed at a 1:4 serum dilution and selected positive serums were titrated to determine antibody titer.

RESULTS AND DISCUSSION

Neutralizing antibody to ICH and CD viruses were found in the serum specimens of skunks and raccoons but not in opossums and woodchucks (Table 1). The CD neutralizing antibody was a common occurrence in raccoons; 84% were serotest positive. Two positive raccoon serum specimens randomly selected for end titer determination each had titers of 1:256 or greater. Two of 25 skunk sera had CD neutralization antibody. Each had titers of 1:64. Both skunks and raccoons have been reported susceptible to CD.[4] The finding of ICH neutralizing antibody in raccoons extends the observations of Parker and his co-workers.[6] They found

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TABLE 1. Neutralizing Antibody to Canine Viruses in Wild Mammals.

Species	No. Positive/Total Tested Against (% positive)			
	Infectious Canine Hepatitis	Canine Distemper	Canine Herpes	Parainfluenza SV-5
Skunks	59/94 (63)*	2/25 (8)	0/25	0/25
Raccoons	6/50 (12)	21/25 (84)	0/25	0/25
Opossums	0/25	0/25	0/25	0/25
Woodchucks	0/9	0/9	0/9	0/9

*Previously reported.[1]

ICH complement fixing antibody in one of nine raccoons. As the complement fixation test may measure a group adenovirus reaction, the demonstration of neutralizing antibody indicates that ICH or a closely related virus was infecting the raccoons. The most potent raccoon serum neutralized the skunk ICH isolate[1] and the reference ICH virus to the same titer (1:64). Four of the remaining 5 positive raccoon sera titered 1:4 and the fifth 1:16 against ICH virus.

Neutralizing antibody for canine herpes and SV-5 virus were not found in sera from 4 species of wildlife.

Experimental infection and further field observations are required to evaluate the significance of skunks and raccoons in the epizootiology of CD and ICH.

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Received for publication February 8, 1972