

Antibody Response to Canine Distemper Vaccine in African Wild Dogs

Authors: Spencer, Jennifer, and Burroughs, Richard

Source: Journal of Wildlife Diseases, 28(3) : 443-444

Published By: Wildlife Disease Association

URL: <https://doi.org/10.7589/0090-3558-28.3.443>

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Antibody Response to Canine Distemper Vaccine in African Wild Dogs

Jennifer Spencer^{1,3} and Richard Burroughs,² ¹ Department of Infectious Diseases, Faculty of Veterinary Science, University of Pretoria, Private Bag X04, Onderstepoort 0110, South Africa; ² 857 Fiskaal Street, Silverton, Pretoria 0001, South Africa. ³ Author to whom correspondence should be addressed

ABSTRACT: Antibody levels against canine distemper virus were measured by means of an immunofluorescent antibody test prior to, and after, administration of a modified-live virus booster vaccine to seven African wild dogs (*Lycaon pictus*). Positive seroconversion with no harmful side-effects was seen in all the animals.

Key words: wild dogs, distemper virus, modified-live virus vaccine, immunofluorescent antibody test.

Canine distemper (CD) is an acute to subacute contagious systematic disease with a high mortality rate in domestic dogs (*Canis familiaris*) and other carnivores throughout the world (Appel, 1987). Many different species in the order Carnivora are susceptible to CD and the mortality rate varies greatly among species (Appel and Gillespie, 1972).

African wild dogs (*Lycaon pictus*) are susceptible to infection with canine distemper virus (CDV) (Van Heerden et al., 1980), and are best protected against this disease by vaccination (Appel, 1987). However, disease and death from vaccine induced CD has been reported in African wild dog litters (Durchfeld et al., 1990). Currently, the numbers of African wild dogs in the wild are diminishing. Increasingly, these animals are being kept in captive breeding programs where they inadvertently may be exposed to canine diseases. This has necessitated the need for effective vaccines to protect this endangered species against these diseases.

The present study group, a pack kept for breeding at the De Wildt Cheetah Research Centre of the National Zoological Gardens of South Africa, Pretoria, South Africa (25°44'S, 28°12'E) has been vaccinated for several years using the Vanguard 5 vaccine (SmithKline Animal Health, Halfway House, 1685, South Africa). This

vaccine contains modified live canine parvovirus, canine parainfluenzavirus, canine adenovirus type 2 and canine distemper-virus. To date there have been no obvious side effects from this vaccine, but Van Heerden et al. (1980) observed a lack of seroconversion to live vaccine. Our objective was to measure the antibody response to distemper in this vaccine in wild dogs.

Seven dogs were bled prior to booster vaccination and again 1 mo post-vaccination. Antibody levels were measured by means of an immunofluorescent antibody test (IFA) using commercially available slides onto which canine distemper-infected cells were fixed (VMRD Inc., Pullman, Washington, USA). Serum samples were diluted 1:100 in phosphate buffered saline and the fluorescent reaction was scored from a weak (\pm) to a very strong (3+) response (Spencer, 1991).

All seven dogs had at least a two-fold increase in antibody titer as measured qualitatively by an IFA test (Table 1). This would suggest the efficacy of the present vaccine as a management tool in captive wild dog populations.

TABLE 1. Canine distemper indirect fluorescent antibody test results of African wild dog sera following booster vaccination with a polyvalent vaccine containing canine parvovirus, adenovirus, and distemper-virus.

| Dog No. | Pre-bleed | Post-bleed |
|---------|-----------|------------|
| 1 | ++ | 2+ |
| 2 | + | 2+ |
| 3 | + | 3+ |
| 4 | \pm | 2+ |
| 5 | + | 2+ |
| 6 | \pm | 2+ |
| 7 | + | 2+ |

* Serum samples were diluted 1:100, and scored from a weak (\pm) positive to a very strong (3+) response (Spencer, 1991).

Use of multivalent vaccines can induce lymphopenia in domestic dogs (Appel, 1987). Post-vaccination immunosuppression with clinical distemper as a secondary complication also has occurred in African wild dogs (Durchfeld et al., 1990). There was no evidence of other diseases or any other side effects which might indicate immunosuppression with the use of Vanguard 5 vaccine, indicating its safety in non-domestic populations.

We thank the staff of De Wildt for their cooperation, the Director of the National Zoological Gardens, and Mrs. Coetzer for typing this manuscript.

LITERATURE CITED

- APPEL, M. 1987. Canine distemper virus. *In* Virus infections of carnivores, M. Appel (ed.). Elsevier Science Publishers, Amsterdam, Netherlands, pp. 133-153.
- , AND J. H. GILLESPIE. 1972. Canine distemper virus. *In* Virology monograph 11. S. Gard, C. Hallauer, and K. F. Meyer (eds.). Springer-Verlag, New York, New York, pp. 1-96.
- DURCHFELD, B., W. BAUMGÄRTNER, W. HERBST, AND R. BRAHM. 1990. Vaccine-associated canine distemper infection in a litter of African hunting dogs (*Lycaon pictus*). *Journal of Veterinary Medicine Series B* 37: 203-212.
- SPENCER, J. A. 1991. Survey of antibodies to feline viruses in free-ranging lions. *South African Journal of Wildlife Research* 21: 59-61.
- VAN HEERDEN, J., W. H. SWART, AND D. G. A. MELTZER. 1980. Serum antibody levels before and after administration of live canine distemper vaccine to the wild dog *Lycaon pictus*. *Journal of the South African Veterinary Association*. 31: 283-284.

Received for publication 28 June 1991.