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TRYPANOSOMES FROM MULE DEER IN NEW MEXICO AND COLORADO

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Abstract: Trypanosoma sp. was isolated from 6 of 11 mule deer *(Odocoileus hemionus)* in southwest and northcentral New Mexico and from 12 of 15 mule deer in northcentral Colorado. To our knowledge, this represents the first reported isolation of trypanosomes from this species.

INTRODUCTION

During the study of horse flies[2] (Diptera: Tabanidae) as vectors of *Elaeophora schneideri* in southwest New Mexico, histological sections of these insects were examined. In the blood meal and hindgut of all of 11 flies containing blood, small, basophilic, trypanosome-like organisms were observed. It was, therefore, hypothesized that mule deer might have trypanosomes, if the organisms in the fly were intermediate forms of mammalian trypanosomes and not flagellate parasites of horse flies. Based on these findings and the initial report of *Trypanosoma* sp. in white-tailed deer *(O. virginianus)* in the United States,[2] it was decided to culture blood samples from mule deer and examine them for trypanosomes.

METHODS AND MATERIALS

Samples were taken from captive deer at the Heart Bar Wildlife Area, a research facility of the New Mexico Department of Game and Fish in the Gila National Forest, and from immobilized, free-ranging deer in Vermejo Park, a privately-owned ranch situated in the extreme northcentral part of New Mexico. Deer in Colorado were sampled in Middle Park (Grand and Summit Counties). The blood was cultured in a veal infusion medium, Bacto-Veal Infusion Medium (DIFCO), pH 7.2, similar to the methods of Kistner and Hanson.[2] Each ml of medium contained 500 U Sodium Penicillin G and 0.05 g Dihydrostreptomycin Sulfate. Tubes were incubated at room temperature (22 C).

Cultures were examined periodically during the 3-week interval after inoculation. A thin wet mount was made from each culture and carefully examined under a compound microscope at 100X for rapidly moving organisms. Further examination at 430X confirmed the presence of organisms with a whip-like terminal flagellum. Thin Giemsa-stained smears also were examined.

RESULTS

Blood samples were collected from 11 mule deer in New Mexico on 29 December 1971 and 1 and 2 February 1972. The first collection consisted of five samples from the Heart Bar; the other six were from Vermejo Park. Fifteen samples were taken in Colorado in March and April. Trypanosomes were observed in cultures from all areas (Table 1).

TABLE 1. Results of examination for trypanosomes of blood-veal infusion medium cultures from New Mexico and Colorado mule deer.

Area	No. Deer Examined	No. Deer Positive
Heart Bar Wildlife Area, N.M.	5	3
Vermejo Park, N.M.	6	3
Middle Park, Colo.	15	12

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This limited number of blood samples revealed that 18 (69.2%) of 26 mule deer had trypanosomes. Of the six infected New Mexico animals, three were females and three were males. All samples in Colorado were from females.

The trypanosomes had a long terminal flagellum originating at the kinetoplast, usually anterior to the nucleus. However, in a few of these organisms the kinetoplast appeared lateral or posterior to the nucleus. Excluding the flagellum, they were 8.2 to 19.1 (13.2) μ long and 1.3 to 2.7 (2.1) μ wide. In addition, there were shorter, apparently younger, forms in the cultures. An undulating membrane was present on many of the organisms. This was evidenced by their rapid and often quite erratic movement in the wet mounts.

DISCUSSION

Based on a cursory survey of the literature, including the publications of Walker and Becklund[3] and Wells and Lumsden,[4] it seems that no prior reports of *Trypanosoma* spp. in mule deer within the United States have been made. Although blood smears have been periodically taken from mule deer, trypanosomes have apparently not been found. The incidence of infection is similar to the initial report (76.3%) from white-tailed deer.[2]

Two of the positive deer at the Heart Bar had been transported from the Roswell Zoo. They were experimentally infected with inocula containing third stage *E. schneideri* larvae which had been dissected from horse fly heads and mouthparts and retained in physiological saline solution.[1] This suggests the possibility of experimental infection with a protozoan organism as well as the filarial parasite.

The significance of the occurrence of *Trypanosoma* spp. in mule deer is not known.

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