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HEMATOLOGIC VALUES OF CONDITIONED, CAPTIVE WILD COYOTES

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Abstract: Hemograms were performed on blood samples collected from 35 coyotes (*Canis latrans*). Hematologic values were established for conditioned, captive wild coyotes under controlled conditions of environment and nutrition.

INTRODUCTION

Limited work has been done to establish physiologic parameters for the normal coyote. There is a paucity of published data on blood values in the coyote. The purpose of this study was to observe and record hematologic data on conditioned, captive wild coyotes under controlled conditions of environment and nutrition.

METHODS

Snowmobiles were used to capture 35 adult male and female coyotes between December, 1974 and March, 1975. All of the coyotes in this study were caught within a 170 km radius of the U.S. Sheep Experiment Station, Dubois, Idaho. The average altitude for this area is approximately 1.7 km above sea level. A minimum of 3 months in captivity was allowed for the animals to acclimate to the new environment. The coyotes were housed in a modern kennel of standard design. Dry food, available *ad libitum*, was formulated to furnish minimum nutritional requirements of the domestic canid.[3] The animals were apparently normal and in a state of good health during this investigation.

Hematologic determinations were performed on jugular blood samples collected in 2-ml Vacutainers[1][2] containing 3 mg of potassium ethylenediaminetetraacetic acid (EDTA). All blood values were observed within 2 hrs after sample collection.

Total leukocyte and erythrocyte counts were determined with a Spencer Bright-Line hemocytometer in conjunction with the Unopette[2] pipetting system. Hemoglobin values were obtained with a spectrophotometer[3] in conjunction with the Unopette pipetting system; the cyanmethemoglobin method was used. A standard hemoglobin curve was established with a certified commercial hemoglobin standard.[4] Packed cell volumes (PCV) were determined by the microhematocrit method. Differential white blood cell counts were performed from blood films fixed with methyl alcohol. Films were stained by a modified Wright's dip technique.[1] The battlement method of counting was used. A minimum of 200 cells was counted for each differential count. Mean corpuscular volume (MCV), mean

[1] Mention of a trade name, proprietary product, or specific equipment does not constitute a guarantee or warranty by the U.S. Department of Agriculture and does not imply its approval to the exclusion of other products that may be suitable.

[2] Becton, Dickinson & Co., Rutherford, N.J.

[3] Model B, Beckman Instruments, Inc., Fullerton, Calif.

[4] Hycel, Inc., Houston, Tex.

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corpuscular hemoglobin (MCH), and mean corpuscular hemoglobin concentration (MCHC) values were determined by calculation.[4]

RESULTS AND DISCUSSION

Hematologic values for all coyotes used in this investigation are summarized in Table 1. Range, mean, and standard deviation are given for each value.

The coyotes used in this study, although considered to be conditioned, were still wild animals. Methods of manual restraint were conducive to fright. Such handling was mandatory for the safety of personnel involved. Some animals were obviously more opposed to restraint than others. Because of the inherent apprehension involved with such methods of restraint, some degree of splenic contraction along with increased heart rate must have occurred. The resulting stress may have caused some elevation in packed cell volume (PCV) and red blood cell (RBC) counts. The white blood cell (WBC) counts may have been similarly affected although the data indicated a lower level than that established for dogs.[4] During periods of stress, elevated levels of glucocorticoids are secreted continuously.[2] Increased levels of glucocorticoids may have depressed total WBC counts. Blood values in coyotes within 24 hrs after capture compared favorably with values from conditioned animals with the exception of total WBC counts and percentage of neutrophils, both of which were significantly higher in coyotes soon after capture. The effects of prolonged excitation associated with capturing on sequestered white blood cells apparently accounted for these elevated values in the newly caught animal. This

TABLE 1. Hematologic values of coyotes (males and females combined).

Hematologic value*	Range	Mean	S.D.
White blood cells	5,300.0 - 16,000.0	8,900.0	2,900.0
Neutrophils	3,074.0 - 13,400.0	6,203.0	447.0
%	58.0 - 84.0	69.7	7.2
Lymphocytes	424.0 - 5,760.0	1,860.1	125.0
%	8.0 - 36.0	20.9	6.7
Monocytes	0 - 960.0	293.7	3.5
%	0 - 6.0	3.3	1.2
Eosinophils	106.0 - 2,880.0	525.1	16.3
%	2.0 - 18.0	5.9	3.1
Basophils	0 - 160.0	8.9	0
%	0 - 1.0	0.1	0.3
RBC ($10^6/\mu l$)	5.0 - 9.1	7.7	1.0
Hb (g/dl)	10.1 - 18.0	14.7	1.9
PCV (%)	37.0 - 57.0	49.0	5.9
MCV (fl)	56.0 - 74.0	63.4	3.6
MCH (pg)	14.7 - 22.9	19.2	2.0
MCHC (g/dl)	24.8 - 34.5	30.3	2.6

* RBC, red blood cells; μl, microliters; Hb, hemoglobin; g/dl, grams per deciliter; PCV, packed cell volume; MCV, mean corpuscular volume; fl, femtoliters; MCH, mean corpuscular hemoglobin; pg, picograms; MCHC, mean corpuscular hemoglobin concentration.

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evidence would indicate that recently captured coyotes should be conditioned before they are used for research, particularly when hematologic values are used. There were no significant differences in values for males and females. Eosinophil counts were observed to be significantly higher than those previously established for the dog.[4] Fecal examinations revealed light to moderate infections with nematodes and tapeworms in a majority of the coyotes; thus, parasitism may have accounted for the high eosinophil counts.

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