

Cyclic Variation in the Mule Deer Thymus.* (22695)

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A series of fawn, yearling, and adult female mule deer (*Odocoileus hemionus hemionus*) was collected on the National Bison Range, Moiese, Mont. for purposes of studying the reproductive cycle of the female mule deer. Specimens of each of the 3 age groups were killed each month between Aug., 1953 and Sept., 1954. Measurements, tissue weights, and tissue preservation were made in the field. One of the tissues routinely measured, and portions preserved, was the bilobed thymus gland.

Method. The female deer were hunted, shot, and autopsied on the open range. All measurements were made on the fresh thymus *in situ*, each lobe being measured separately. The length, width at the middle, and the thickness in the center transections were taken with a celluloid rule. A portion of each gland was removed and preserved in Bouin's fixative. No histological study of this material has been made to date. The volume of each gland was calculated by assuming the gland to be an elliptical spheroid. The calculated volumes of the 2 lobes were averaged and divided by the total body weight of the animal to obtain the thymus volume/body weight ratios used in Fig. 1. The curve of the thymus volume/body weight represents the combined average values of the three age classes for each month. The total number of animals used was: 22 fawns, 22 yearlings, and 26 adult female mule deer.

Results. All 3 classes exhibited the same type of annual thymus volume cycle, although the fawns had the highest value of the 3 age classes for the late spring-early summer months. The pregnant adult does had the least high value of the 3 age classes for that time of year, and the yearlings had intermediate values. All 3 age classes were equally

low during the winter months whether they were pregnant or non-pregnant.

The thymus gland is commonly used as an indicator of systemic stress(1), but it seemed conjectural to us whether or not in this case the thymus gland could be used as an indicator of systemic stress. The annual variation in thymus gland volume might well represent stress factors of high temperatures and "burnt up" vegetation in the summer months, and cold temperatures and difficulty of obtaining feed in the snowy winter months. The slower recovery of thymus volumes in the yearlings and adults in the early spring can be attributed to placental hormones from December to June. Non-pregnant fawns had thymi with values as low as the pregnant yearlings and adults during December, January, and February.

The data also permit the hypothesis that light stimulates the production of a thymotropic hormone via the pituitary gland. This hypothesis seems as reasonable as that of stress when the close correlation is noted between the average monthly hours of daylight and the thymus volume/body weight curves, (Fig. 1). Also there was no indication of annual adrenal cycle in weight, volume, or cortex-medulla ratio which is believed to be intimately involved in any symptoms of systemic stress.

The apparent relationship of the thymus volume in the mule deer to climatic conditions revealed in this study warrant the attention of other investigators. This is particularly appropriate since circumstances prevent the present authors from immediately following up the ramifications of the problem on either domestic, laboratory, or game animals.

Summary. Thymus glands from a series of fawn, yearling, and adult female mule deer, collected on the National Bison Range, Moiese, Mont., varied in volume with the season. The thymus reached its lowest volume during the winter months (Dec.-Feb.)

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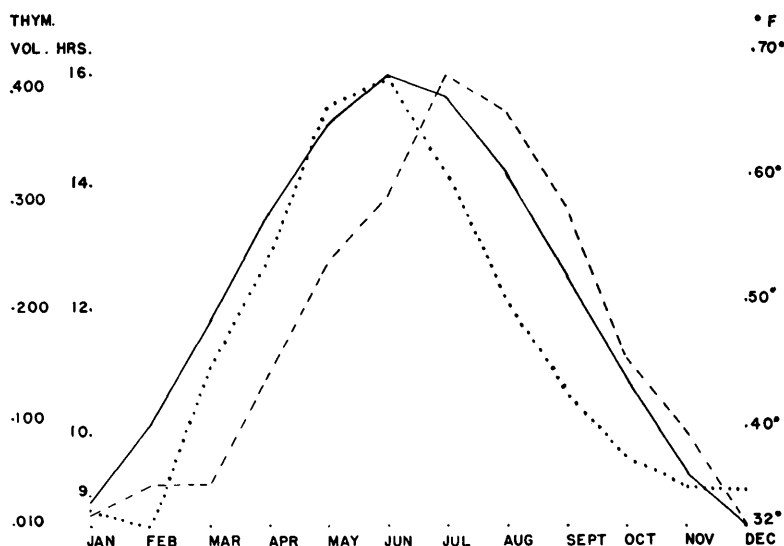


FIG. 1. Annual weather cycle, and thymus volume of female mule deer, National Bison Range, 1953, 1954. Avg monthly day length, ———; avg monthly temperature, 1953-1954, - - - - -; avg monthly thymus vol/body wt ratios of female mule deer of all age groups, ·····

and reached its largest size in all 3 age classes during late spring and early summer (May-July). All 3 groups exhibited the same type of annual thymus volume cycle, although the fawns had the highest value of the 3 age classes for the late spring-early summer months. Pregnant or lactating adult does had the lowest value of the 3 age classes for that time of year, although these values were considerably higher than those of the winter months. The data permit the hypothesis that light stimulates production of a thymotropic hormone probably via the pituitary gland.

There is very good correlation between average monthly hours of daylight and thymus volume body weight curves. Stress factors such as high temperatures and "burnt up" vegetation in late summer, and cold temperatures and difficultly available food in snowy winter months may also affect the size of the thymus.

1. Selye, Hans, *The physiology and pathology of exposure to stress*. Acta, Inc., Montreal, Canada. 822 pp, 1950.

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Obtaining Data by Telephone. A Clinical Evaluation of Hypnotic Drugs. (22696)

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The widespread use of hypnotic drugs suggests that many people require some aid to fall asleep. Repeated studies at the Indianapolis General Hospital using the usual doses of various hypnotics have failed not only to demonstrate differences among hypnotic agents but also between the hypnotics and placebo. This paper presents our experi-

ence with telephone reporting.

Method. Tablets of Ethinamate (Valmid), Glutethimide (Doriden), Methypylon (Noludar), and secobarbital sodium (Seconal Sodium) containing 500 mg, 500 mg, 200 mg, and 100 mg, respectively, were used. Envelopes containing one or 1½ tablets of these hypnotics or placebo were given to patients