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Arbovirus Complement Fixing Antibodies in Sera of Wildlife of West Central Utah.* (29790)

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During the routine serological examination of wildlife sera for complement fixing (CF) antibodies(1-3) using *Rickettsia rickettsii, Coxiella burnetii, Pasteurella pestis* and psittacosis antigens, certain species were found to produce multiple and suspected false positive reactions. In attempts to determine the cause of these reactions, the serum samples were tested with several other CF antigens, including western equine encephalomyelitis (WEE), eastern equine encephalomyelitis (EEE), Venezuelan equine encephalomyelitis (VEE) and St. Louis equine encephalomyelitis (SLE) antigens.

The antigens used in these tests were obtained commercially from Lederle and Markhan Laboratories. The tests utilized 2 exact units of complement (fresh whole guinea pig serum), 2 units of antigen, as determined by block titration, and 2 units of commercial hemolysin. A 2-4°C overnight incubation was used for this combination of serum, antigen and complement. This incubation was followed by addition of sensitized sheep red blood cells and another incubation period of one hour in a 37°C waterbath. Hemolysis of 50% or less was considered indicative of a positive sample at a serum dilution of 1:16 or greater. Appropriate controls, including known positive and negative serum samples, were used in each test.

Known outbreaks of WEE have occurred recently in Utah(4), and SLE reportedly has a distribution which includes this area(5). Evidence of EEE virus has been reported as far west as Texas(6), and several reports have indicated the possible existence of VEE

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TABLE I. Encephalitides Complement Fixing Antibodies* in Serum Samples from Wildlife of West Central Utah.

Year	No. serum samples tested	No. positive specimens				No. of specimens showing cross reactions					
		EEE	WEE	VEE	SLE	WEE, EEE VEE	WEE VEE	WEE EEE	SLE WEE	SLE VEE	All
1961	521	0	0	5	8	0	1	0	0	0	14
1962	524	0	2	5	10	1	1	0	0	1	19
1963	7,087	5	24	41	59	4	2	3	2	4	104
1964	968	1	3	6	12	1	0	0	0	2	3
Totals	9,100	6	29	57	89	6	4	3	2	7	140

* Titers of 1:16 or greater.

in the southeastern United States and Mexico(7-10). In view of the known distribution of these viruses and the expected cross reactions between some of these arbovirus antigens, it was anticipated that some sera would be positive with one or two or more of these antigens.

Approximately 8,370 serum samples from 39 different mammalian species were examined in this study. An additional 727 bird serum samples of 62 different species were also tested. A list of the mammalian and avian species tested has been reported(1). A summary of these tests, with the cross reactions observed, is presented in Table I. Approximately 70% of the encephalitis positive sera shown in Table I were also found to be reactive with one or more of the more specific antigens of *R. rickettsii, C. burnetii* and *P. pestis*. Cross reactions with the psittacosis antigen, which is less specific(3), occurred most frequently.

Of the total sera tested, 176 reacted with only one of the encephalitides antigens, *i.e.*, no serological cross reactivity was noted. These are shown by animal species in Table II. Although several areas within the State of Utah were tested, no one specific area contained a significantly higher number of animals having reactive sera than another.

A limited number of these serum samples have been tested using the hemagglutination inhibition and the serum neutralization techniques for WEE, SLE and VEE by ourselves and by other laboratories. These tests were also positive, corroborating the CF results obtained.

Summary. In a survey for endemic diseases of the wildlife of West Central Utah, 9,100 serum samples were examined for the presence of complement fixing antibodies against 4 arboviruses; eastern (EEE), western (WEE), Venezuelan (VEE) and St. Louis (SLE) equine encephalomyelitis. Antibody titers of 1:16 or greater, with no cross reaction evident, were found in 6 specimens

TABLE II. Animal Species Showing Positive Complement Fixation Antibody Titers of 1:16 or Greater with Only One Encephalitides Antigen.

Species	No. positive				No. tested
	EEE	VEE	WEE	SLE	
Peromyscus maniculatus (deer mouse)	1	12	9	14	1,937
Lepus californicus (black-tailed jack rabbit)	2	13	6	21	860
Reithrodontomys megalotis (Western harvest mouse)	0	11	2	4	276
Sylvilagus audubonii (desert cottontail)	2	6	9	24	47
S. nuttallii (Nuttal cottontail)	0	5	0	1	19
Dipodomys microps (chisel-toothed kangaroo rat)	0	3	1	8	374
D. ordii (Ord kangaroo rat)	1	0	1	9	787
Citellus leucurus (white-tailed antelope squirrel)	0	5	0	2	391
Vulpes macrotis (kit fox)	0	1	0	0	2
Oreoscoptes montanus (sage thrasher)	0	1	0	1	14
Eremophila alpestris (horned lark)	0	0	1	5	90
Others	0	0	0	0	4,303
Totals	6	57	29	89	9,100

from 4 animal species against EEE, 57 from 9 species against VEE and 29 from 7 species and 89 from 10 species against WEE and SLE respectively. In addition to these reactors, 162 other serum samples were found to be positive with two or more of these arbovirus antigens. Only WEE and SLE are known to be present in this region based upon known outbreaks and previous studies of others.

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Mammary Growth in Rats Treated with Somatotropin During Pregnancy and/or Lactation.* (29791)

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Several studies have indicated that somatotropin (STH) exerts a galactopoietic effect in the cow, sheep and goat(1). In the rat, STH has been reported to have either no effect(1) or to increase(2) lactational performance depending on the method employed in assessing milk secretion.

Moon(3) has shown that STH enhanced mammary growth induced in ovariectomized rats with ovarian steroids and that concomitant injections of estrogen and STH into the spayed rat resulted in formation of alveoli containing a considerable quantity of secretory material. Furthermore, a positive correlation between mammary gland cell content and amount of milk obtained at a single nursing has been reported(4).

In the present study, we were interested in determining whether exogenous STH administered during pregnancy and/or lactation would enhance mammary growth and if so, whether the increased mammary growth would be reflected in the lactational performance of the animal.

Material and method. Adult primiparous and primiparous lactating rats weighing 220-240 g when bred were housed individually in a room maintained at a temperature of 76-78°F and artificially illuminated during normal daylight hours. Animals received Wayne Lab Blox and fresh water *ad libitum*. The day sperm were observed in the vaginal smear was designated as *day 1* of pregnancy whereas the day of parturition was considered as *day 1* of lactation. Rats were divided into groups and received daily subcutaneous injections of 2.0 mg STH‡ from either day 3-19 gestation or day 1-13 lactation. Another group received graded increments (0.5-3.0 mg) of the hormone every 6 days during both pregnancy and lactation. Other groups of rats served as pregnant and lactation controls.

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