

SEATO Medical Research Study on Leptospirosis

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General Information

Serologic evidence of increased prevalence of this disease was encountered in cattle and buffalo sera collected from northern provinces in Thailand. Serologic and culture results in the limited number of human specimens obtained have not indicated a high prevalence in man. The causative organism has been cultured from kidneys of dogs, swine and rodents and to a lesser extent from water. Results indicate that dogs and rodents may play a major role in transmission. Minimal success has been obtained in isolation of leptospire from cattle and buffalo kidneys.

The majority of specimens cultured were obtained from older animals and this may account for low recovery rates. A pilot study has been initiated involving young animals of both species. Results will be reported later.

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Study Reports

1. Title: "Serological Classification and Detection of Leptospirosis in Thailand".

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OBJECTIVE: The objective of this study is to obtain serologic evidence of the prevalence of leptospirosis in domestic animals, rodents and humans in Thailand.

DESCRIPTION: Sera from cattle and buffalo were collected by field teams of the Department of Livestock Development, Ministry of Agriculture. The sera are separated in the field by clot extraction and shipped to Bangkok with wet ice as refrigerant. Paired human sera were collected by various SMRL teams from febrile patients. At laboratories located in the facilities of the Department of Livestock Development the agglutination lysis test is performed utilizing eighteen live diagnostic antigens. All sera are examined at 4 fold serial dilutions, positive results are based upon 75% or more agglutination. Twenty five percent or less agglutination is considered negative.

PROGRESS: During the report period, 1495 buffalo sera collected from Nan, Prae, Lampang, Ubol and Lamphoon provinces were tested. Five hundred eighty-nine, or 39.4%, of these had titers of 1:25 or greater. Two hundred twenty-three had their highest titers to the L. hyos antigen. The remainder had their highest serological titers to 16 other antigens with a low percentage having affinity for antigens L. djasiman, L. ballum, L. alexi, L. javanica and L. australis. Seven hundred ninety-three cattle sera were from the same provinces were also tested. Two hundred sixty of these, representing 33.5%, had titers of 1:25 or greater. Serological affinity for L. hyos and L. borincana antigens predominated. A low percentage had their highest titers to antigens L. butembo, L. bataviae, L. pomona, L. djasiman, L. canicola, L. icterohemorrhagiae, L. grippotyphosa and L. javanica. None had titers greater than 1:25 to these antigens. Sera obtained from 14 rodents trapped in Bangkok had a reactor rate of 28.5%. Serologic affinity to antigens L. bataviae and L. javanica was equally divided. Ninety-seven human sera were tested. Sera from one patient reacted at 1:25 with the antigen L. australis, the remainder had no response.

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The following table shows the agglutinin responses obtained:

<u>Antigen</u>	Buffalo (1495)		Cattle (793)		Rodent (14)	
	1:25	1:100 ⁺	1:25	1:100 ⁺	1:25	1:100 ⁺
<u>L. andaman</u>			23			
<u>L. butembo</u>	6		4			
<u>L. bataviae</u>	16		1		1	1
<u>L. pomona</u>	10	1	1			
<u>L. djasiman</u>	1	2				
<u>L. hyos</u>	164	59	56	30		
<u>L. autumnalis (FBF)</u>	28	7	9	2		
<u>L. ballum</u>	7		17			
<u>L. canicola</u>	22	5	5			
<u>L. icterohemorrhagicae</u>	14	3	3	1		
<u>L. pyrogenes</u>	73	16	6	4		
<u>L. alexi</u>	1					
<u>L. grippotyphosa</u>	7	4	3			
<u>L. borincana</u>	51	21	53	26		
<u>L. wolffi</u>	47	17	12	7		
<u>L. javanica</u>	1		1		2	
<u>L. australis</u>		1				

Agglutin response was greater in both cattle and buffalo from Prae and Lampang provinces than in any other province previously surveyed. Although low titers (1:25) continue to predominate, a higher percentage of titers of 1:100 or higher were reported.

Sera from 91 swine located in Vientian, Laos and which had the abortion syndrome were also examined. No serological response was found, suggesting that leptospirae were not the causative organisms

SUMMARY: Area and species differences in prevalence of leptospiral serotype agglutinins provide pertinent information on the epidemiology of the disease in wild and domestic animals in Thailand. A higher incidence (39.4% buffalo and 33.5% cattle) was observed in these animals than had been encountered in previous surveys of animals from other provinces. Serologic response to L. hyos antigen predominated in the areas tested. Serologic results on acute and convalescent sera obtained from human patients with diagnoses of "fevers of unknown origin" did not indicate that the leptospirae were the causative agents. Further study of modes and vehicles of transmission of the causative organism is certainly indicated in view of the significant serological incidence encountered in domestic animals.