

## Laboratory Animal Disease in Thailand: Its Occurrence and Importance to Comparative Medicine

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**OBJECTIVE:** The objective of this study is to detect and investigate spontaneous metabolic and infectious diseases of laboratory animals for the purpose of recognizing and developing animal models for research studies as well as to define and improve the health of laboratory animals maintained in Thailand.

**DESCRIPTION:** In order to accomplish the objective, a program of continuous surveillance of the health status of the animal colony has been developed. Four areas are emphasized in this program: the disease screening program conducted in the laboratory animal breeding colony, the recurring clinical and laboratory examination of animals housed in the laboratory including those procedures performed during the quarantine of newly purchased animals, complete post mortem examination of each animal that dies in the colony, and the development of standards for operation and quality control that are indicated by the resulting findings. When indicated by the findings, experimental studies are initiated to explore the problems that occur in detail.

**PROGRESS:** There was little evidence of spontaneous disease among laboratory rodents during the report period. The annual production of mice, hamsters, and guinea pigs has been maintained at levels comparable to that of previous years, as have indicators of production efficiency such as the conception rate and yield per female. The number of small rodents necropsied and the distribution of gross pathological lesions according to the organs system where they were most frequently observed is shown in Table 1. Gross pathological lesions usually consisted of lobar pneumonia, regional enteritis, and cystic ovaries in the case of guinea pigs. Bacteria isolated from either the respiratory or digestive systems of mice, hamsters, and guinea pigs as part of the disease screening program are shown in Table 2. Randomly sampled retired breeders from the mouse colony were screened for the presence of antibodies to 12 latent murine viruses. This survey was the result of concern that viruses thought to be isolated in the field in suckling mice might actually be murine viruses latent in the mouse colony. Approximately 30 viruses other than Japanese encephalitis virus were isolated from suckling mice which had been inoculated with field specimens collected from the Chlengmai JEV study. The serological testing of the 20 randomly sampled mice revealed that 9 had antibodies to Reovirus 3, 4 had antibodies to CD V111 virus, 12 had antibodies to Sendai virus, 12 had antibodies to Minute Virus of mice, 2 had antibodies to Mouse Hepatitis virus, and 2 had antibodies to Mouse Corona virus. There was no serological evidence of infection with Pneumonia virus of mice, K virus, Polyoma, Ectromelia, Mouse Adenovirus, or Lymphocytic choriomeningitis. The 30 virus isolates themselves were sent to the Division of Veterinary Medicine at the Walter Reed Army Institute of Research for identification. Because there are no mice bred either by conventional or SPF methods that are not already infected with latent murine viruses, the isolates were inoculated into germfree mice to produce "pure" antibody. This antibody was utilized in standard tests to identify the isolates. These tests are currently in progress and have not yet been completed.

A number of spontaneous deaths occurred among primates in the laboratory. Twenty-two deaths occurred among gibbons and 27 among macaques. The causes of these deaths are summarized in Table 3 for gibbons and macaques. Of particular interest are the two additional cases of granulocytic leukemia that developed in gibbons during the report period. Clinical signs and pathological lesions of interstitial and giant cell

pneumonia suggest that primary measles virus infection with bacterial complications and attendant high mortality is the most frequently occurring and serious disease seen among rhesus monkeys newly imported from India. Virus isolation procedures to confirm the etiology of this disorder have not been attempted. This is largely a result of the fear that other agents such as Herpesvirus simiae might be recovered simultaneously. Although the possibility of immunizing monkeys with human measles vaccine has been considered as a prophylactic measure, it has not yet been attempted. Oral administration of vitamin C at 100 mg. per day for a 14 day period appeared to bring about a dramatic decrease in mortality in one room of quarantined monkeys compared to 2 other rooms, but these results could not be duplicated when a more definitive study was done later.

Table 1.  
Summary of Rodent Breeding Colony Pathology, 1971

Species	Number	Pulmonary pathology	Gastro—Intestinal pathology	Genito—Urinary pathology
Guinea pig	137	35	13	19
Hamster	139	13	7	—
Mice	207	10	4	—

Table 2.  
Bacterial Isolates Identified in the Animal Disease Screening Program, 1971

Species	Number	Lungs															Feces						
		Alpha hem. Strept	Gamma Strept	Strep. sp.	Staphylo. epl.	Staph. aureus.	Proteus spp.	Proteus mirabilis	Paracolobactrum coliforme	Paracolobactrum Intermedium	Mima polymorpha var Oxidans	Mima polymorpha	Enterobacter spp.	Micrococcus sp.	Bacillus sp.	E. coli	Intermedial coliform	Hafnia	Proteus sp.	Pseudomonas sp.	Paracolon sp.	Enterobacter	E. coli
Mice	200—	2	3	—	6	16	2	6	1	—	1	1	—	2	7	10	—	—	20	—	—	5	11
Hamster	100	12	—	1	6	15	1	2	1	—	14	—	2	1	4	1	—	—	21	2	2	14	3
Guinea pig	100—	—	—	—	4	5	—	—	1	2	—	2	1	6	—	1	1	2	9	—	2	7	6

Table 3.  
Summary of Primate Necropsy Findings

Organ System	Lesions	Etiology	Gibbons		Macaques		
			Primary	Secondary	Primary	Secondary	
Respiratory	Pneumonia	Viral	2*		4**		
		Bacterial	1	1	4		
		Inhalation		1	1		
	Pulmon. hemo. Cong. edema Bronchiolitis	Unknown	1	2		3	
	Pleuritis	Lung mites		1		22	
						1	
Cardiovascular	Pericarditis	Bacterial				1	
	Epicardial hemorr. Generalized Cong.			1			
				4		1	
Hemic & Lymph.	Splenitis/necrosis	Viral		2		2	
	Lymphadenopathy			1		1	
Digestive	Gastritis	Bacterial/mycotic Strongyloidosis Balantidiasis Esophagostomiasis	2	5	2		
	Enteritis		1		6	4	
				2			14
	Peritonitis			1			2
	Hepatitis		1	1			
Urogenital	Nephritis	Interstitial glomerular multifocal	1	2		1	
	Nephrosis		1	1		3	
				2			
Endocrine	Adrenalcortical necrosis	Viral				1	
	Adrenocortical mineralization					2	

\* — Diplococcus sp. isolated

\*\* — lesions suggestive of measles virus infection

Table 3. (Continued)

Organ System	Lesions	Etiology	Gibbons		Macaques	
			Primary	Secondary	Primary	Secondary
Nervous	Meningo- encephalitis	bacterial parasitic		1	2*	1
Body as a Whole	Granulocytic leukemia Septicemia	Unknown	2 2			
Musculoskeletal	Myositis	Sarcosporidiosis		1		
Undetermined -- not completed			9		7	

\* — Diplococcus sp. isolated

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