

STUDY REPORTS

3. Title: The Pathogenesis and Transmission of Rabies virus in Rodents.

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Objective The objective of this study is to determine if rabiesvirus infections can be inapparent or chronic in rodents, especially Bandicoota indicus, and to further define potential modes of transmission.

Description Immature Bandicoota indicus, field rats, 6-8 weeks old were obtained by trapping and conditioned to the laboratory environment for 2 weeks or more. They were individually caged and inoculated with rabid mouse brain, 0.2 ml. subcutaneously in the neck region and 0.2 ml. intramuscularly in the quadriceps muscle area. The infected mouse brain was a 20% suspension containing $10^{4.60}$ LD50 per 0.03 ml. when titered intracranially in weanling mice. The rats were anesthetized with thiopental and pentobarbital sodium and one salivary gland was removed at various intervals following infection. These glands were assayed for rabiesvirus by intracranial inoculation of weanling mice. When individual animals became ill they were induced to bite 10 weanling mice. These mice were then observed for 1 month for clinical signs of rabies. When the inoculated rats died their brains, salivary glands, lungs, pancreas, adrenal glands and kidneys were assayed for rabiesvirus.

Oral transmission studies were begun with laboratory rats. Two day old suckling rats were fed a suspension of rabiesvirus infected mouse brains with a soft polyethylene tube on three consecutive days. This suspension was the 3rd mouse brain passage of an isolated designated BR-21, made from a Rattus exulans trapped in Bangkok in October 1967. The titer of the suspension was $10^{-7.5}$ per 0.03 ml. when titered by intracranial inoculation of weanling mice. Controls were fed suspensions of normal mouse brains. Animals dying were examined by the fluorescent antibody technique for the presence of rabies virus. Both control and exposed animals reaching maturity will be challenged with the homologous virus.

Progress The results of an experiment on infectivity of rabies virus for Bandicoot rats is shown in Table 3. Contrary to previous experimental results virus was not isolated from the salivary glands and most of the animals died of rabies following relatively short incubation periods. No rabies virus was isolated from any of the necropsy tissues tested other than brain. One animal died of rabies after a 60 day incubation period.

Results of oral rabiesvirus transmission studies are shown in Table 4. Animals surviving the initial experiment will be challenged with homologous virus after reaching adulthood. Preliminary results indicate that rabies virus can be transmitted to suckling rats by the oral route.

Table 3. Results of Examinations of Somatic tissues of young Bandicoota indicus for presence of rabies virus following infection by parenteral routes.

Animal Number	Death Days Post Inoculation	Brain	Salivary Gland		Lungs	Pancreas	Adrenals	Kidneys	Mouse Exposure by Bite
			Surgical	Necropsy					
1	60	Pos	Neg	Neg	ND*	ND	ND	ND	Neg
2	17	Pos	Neg	Neg	Neg	Neg	Neg	Neg	Neg
3	25	Pos	Neg	Neg	Neg	Neg	Neg	Neg	Neg
4	Animal still alive 90 days P.I.								
5	16	Pos	ND	Neg	Neg	Neg	Neg	Neg	Neg
6	14	Pos	ND	Neg	Neg	Neg	Neg	Neg	Neg
7	16	Pos	ND	Neg	Neg	Neg	Neg	Neg	Neg
8	21	Pos	ND	Neg	Neg	Neg	Neg	Neg	ND
9	14	Pos	ND	Neg	Neg	Neg	Neg	Neg	Neg

*Not determined

Table 4. Transmission of rabies virus infections by the oral route in 2 day old albino rats.

Cage Number/Number ratlings	Suspension Administered	Death Days/P.I.	Results of FRA*	Cause of Death	# Animals surviving
1/11	RMB**	10	Neg	Undetermined	6
		11	Pos	Rabies	
		13	Pos	"	
		13	Pos	"	
		14	Pos	"	
2/11	RMB	9	Neg	Undetermined	5
		11	Neg	"	
		11	Neg	"	
		14	Pos	Rabies	
		15	Pos	"	
		16	Pos	"	
3/10	RMB	7	Neg	Undetermined	4
		9	Neg	"	
		15	Pos	Rabies	
		16	Pos	"	
		16	Pos	"	
		16	Pos	"	
		17	Pos	"	
4/10	NMB***	No deaths			10
5/10	NMB	2	Neg	Undetermined	8
		10	Neg	"	
6/13	NMB	9	Neg	Undetermined	12

* Fluorescent Rabies Antibody Test

** Rabid mouse brain prepared from isolate BR-21

*** Normal mouse brain