

Virus Name: Katerah		Abbreviation: KTRV
Status Probable Arbovirus	Select Agent No	SALS Level 2
SALS Basis Results of SALS surveys and information from the Catalogue.		
Other Information		
Antigenic Group Ungrouped		

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation P6-1361	Accession Number	Original Date Submitted 11/10/1984
Family Not listed	Genus Not listed	
Information From N.J. Marchette and A. Rudnick	Address GW Hooper Foundation, University of California, San Francisco, California 94143 USA	
Information Footnote Revised		

Section II - Original Source

Isolated By (name) Arbovirus Res. Unit, UC ICMR	Isolated at Institute University of Malaya, Kuala Lumpur	
Host Genus Argae pusillus (tick)	Species	Host Age/Stage Larvae
Sex Not Answered		
<u>Isolated From</u>	<u>Isolation Details</u>	
Signs and Symptoms of Illness	Arthropod	
Time Held Alive before Inoculation		
Collection Method By hand from Scotophilus temmencki bats	Collection Date 2/11/1966	
Place Collected (Minimum of City, State, Country) Keterah, Kelantan, Malaysia		
Latitude 6° N	Longitude 102° E	
Macrohabitat Tropical lowland village	Microhabitat Inside and under houses	Method of Storage until Inoculated Revco storage cabinet at -60dC
Footnotes		

Section III - Method of Isolation

Inoculation Date
11/28/1966

Animal (Details will be in Section 6)
nb mice

Route Inoculated
ic and ip

Reisolation
Yes

Other Reasons
*** Unrelated to any virus in laboratory at time of isolation or before.**

Homologous Antibody Formation by Source Animal

Test(s) Used

Footnotes

Section IV - Virus Properties

Physicochemical

Pieces (number of genome segments)	Infectivity	Sedimentation Coefficients(s) (S)
Percentage wt, of Virion Protein	Lipid	Carbohydrate
Virion Polypeptides: Number	Details	
Non-virion Polypeptides: Number	Details	
Virion Density	Sedimentation Coefficients(s) (S)	
Nucleocapsid Density	Sedimentation Coefficients(s) (S)	

Stability of Infectivity (effects)

pH (infective range)

Lipid Solvent (ether - % used to test)	After Treatment Titer	Control Titer
Lipid Solvent (chloroform)	After Treatment Titer	Control Titer
Lipid Solvent (deoxycholate) 1:100	After Treatment Titer <2.0 dex	Control Titer 5.0 dex

Other (formalin, radiation)
May be preserved by lyophilization or storage at -60dC.

Virion Morphology

Shape	Dimensions >100 - <450 nm	
Mean nm	Range nm	
Measurement Method Millipore filter size	Surface Projections/Envelope	Nucleocapsid Dimensions, Symmetry

Morphogenesis

Site of Constituent Formation in Cell Site of Virion Assembly Site of Virion Accumulation

Inclusion Bodies Other

Hemagglutination

Hemagglutination Antigen Source Erythrocytes (species used)
No **SMB homogenate in borate saline diluent** **Goose**

pH Range pH Optimum
5.7-7.3

Temperature Range Temperature Optimum
37dC

Remarks
*** Other isolations in same area, November 1966: 1) adult Argas pusillus ticks 2) blood clot from Scotophilus temmencki bat**

Serologic Methods Recommended
CF and NT

Footnotes
*** Other isolations in same area, November 1966: 1) adult Argas pusillus ticks 2) blood clot from Scotophilus temmencki bat**

Section V - Antigenic Relationship and Lack of Relationship to Other Viruses

Not related by CF to any of the following: Acara, Akabane, Anopheles A, Anopheles B, Aruac, Bandia, Bhanja, Bunyamwera, California, Capim, Chaco, Changuinola, Chenuda, Colorado tick fever, Congo, Dugbe, EHD (NJ), Farallon, Ganjam, Germiston, Grand Arbaud, Guama, Guaroa, Hart Park, herpes, Huacho, Hughes, Irituia, Johnston Atoll, Jurona, Kaisodi, Kemerovo, Ketapang, Koongol, Lahore (Bakau), Lanjan, LCM, Lebombo, Lipovnick, Lone Star, Manawa, Mapputta, Marco, Matucare, Mirim, Mono Lake, Mossuril, mouse EMC, mouse hepatitis, mouse poliomyelitis, mouse poliomyelitis, Navarro, NDV, Nyamanini, Pacui, Palyam, Phlebotomus fever (Naples), Phlebotomus fever (Sicilian), Piry, poxvirus, Qualyub, Quaranfil, rabies, SaAn 4511, Sathuperi, Sawgrass, Silverwater, Soldado, Thogoto, Tribec, Trinita, Upolu, Uukuniemi, VSNJ, VSI, Wanowrie, Wad Medani, yellow fever.

In addition, no reaction by CF with grouping sera for groups A, B, C, or Bunyamwera.

CF results mainly from YARU.

Issyk-Kul and Keterah viruses have been shown to be closely related or identical by complement-fixation [3]. Cross-neutralization testing will determine whether they are the same virus or antigenic relatives. Pending the results of that testing, these viruses are being listed in the ungrouped category (ed.).

Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)

Lab Methods of Virus Recovery (ALL ISOLATIONS)
Newborn mice

Cell system (a)	Virus passage history (b)	Evidence of Infection						
		CPE			PLAQUES			Growth Without CPE +/- (g)
		Day (c)	Extent (d)	Titer TCD50/ml (e)	Day (c)	Size (f)	Titer PFU/ml (e)	
LLC-MK2 (CL)			No CPE			No plaques (4)		
Vero (CL)			No CPE			No plaques (4)		
PS (CL)			CPE			No plaques (4)		
Duck embryo (PC)		4	CPE		10	1.0 mm	6.8** (4)	

** Expressed in dex

Vertebrate (species and organ) and arthropod	No. isolations/No. tested	No. with antibody/No. tested Test used	Country and region
TICKS:			
<i>Argas pusillus</i>	2/2 pools		Kelantan, Malaysia
<i>Argas pusillus</i>	4/4 pools *		Luala Pilah, Malaysia
BATS:			
<i>Scotophilus tammencki</i> (blood)	1/12	0/7	Malaysia
<i>Cynopterus brachyotis</i>	0/29	2/24	
<i>Eonycteris spelaea</i>	0/7	0/4	
<i>Tadarida plicata</i>	0/11	1/5	
<i>Hipposideros diadema</i>	0/3	0/2	
<i>Taphozous melanopogon</i>		0/6	
<i>Rhinolophus refulgens</i>	0/11	0/1	
<i>Rhinolophus horsfieldi</i>	0/11		

* 1 pool of nymphs, 1 pool of females, 2 pools mixed males and females.

Section VIII - Susceptibility to Experimental Infection (include viremia)

Experimental host and age	Passage history and strain	Inoculation Route-Dose	Evidence of infection	AST (days)	Titer log10/ml
Mice (nb)	SMB 6	ic 0.01	Death	8-10	7.0
Mice (nb)		ip			
Mice (nb)		sc			
Mice (wn)		ic 0.03	Death		
Mice (wn)		ip 0.3	Antibody		

Section IX - Experimental Arthropod Infection and Transmission

Arthropod species & virus source(a)	Method of Infection log10/ml (b)		Incubation period (c)		Transmission by bite (d)		Assay of arthropod, log10/ml (e)		
	Feeding	Injected	Days	°C	Host	Ratio	Whole	Organ	System
<p>Virus multiplied in <i>Argas vespertilionis</i> when fed on bats (<i>Rhinopoma harwickei</i> cystops) infected by inoculation. The virus also multiplied in another bat-infesting argasid, <i>Argas transgaripepinus</i>, and in the bird-infesting <i>Argas arboreus</i> and <i>Ar. hermanni</i> following intrahemocoelic inoculation. Transmission tests by feeding infected ticks on clean bats gave equivocal results (1,2).</p>									

Section X - Histopathology

Character of lesions (specify host)		
<u>Inclusion Bodies</u>	<u>Intranuclear</u>	
Organs/Tissues Affected		
Category of tropism		

Section XI - Human Disease

In Nature	Residual	Death
Subclinical	Overt Disease	
Clinical Manifestations		
Number of Cases	Category (i.e. febrile illness, etc.)	

Section XII - Geographic Distribution

Known (Virus detected) Peninsular Malaysia
Suspected (Antibody only detected)

Section XIII - References

1. Varma, M.G.R. Personal communication. 1974. 2. Varma, M.G.R. and Converse, J.D. 1976. J. Med. Ent. 13:65-70. 3. Shope, R.E. Personal communication. 1977. 4. Calisher, C.H., et al. Personal communication. 1983.

Remarks
