

<b>Virus Name: Batai</b>		<b>Abbreviation: BATV</b>
Status <b>Probable Arbovirus</b>	Select Agent <b>No</b>	SALS Level <b>2</b>
SALS Basis <b>Results of SALS surveys and information from the Catalogue.</b>		
Other Information		
Antigenic Group <b>Bunymwera</b>		

**SECTION I - Full Virus Name and Prototype Number**

Prototype Strain Number / Designation <b>MM2222</b>	Accession Number	Original Date Submitted <b>12/10/1984</b>
Family <b>Bunyaviridae</b>	Genus <b>Bunyavirus</b>	
Information From <b>Elisberg and Buescher</b>	Address <b>Dept. of Virus Diseases, WRAIR, Washington, D.C.</b>	
Information Footnote <b>Reviewed by editor</b>		

**Section II - Original Source**

Isolated By (name) <b>US Army Med. Res. Unit (1)</b>	Isolated at Institute <b>Kuala Lumpur, Malaya, Malaysia</b>	
Host Genus <b>Culex (Culex) gelidus</b>	Species	Host Age/Stage <b>Adult</b>
Sex <b>Female</b>		
<u>Isolated From</u>	<u>Isolation Details</u>	
Signs and Symptoms of Illness	Arthropod	
Time Held Alive before Inoculation		
Collection Method <b>Aspirated from cattle bait</b>	Collection Date <b>12/26/1955</b>	
Place Collected (Minimum of City, State, Country) <b>Kuala Lumpur grazing grounds, Malaya, Malaysia</b>		
Latitude <b>3° 14' N</b>	Longitude <b>101° 49' E</b>	
Macrohabitat <b>Mixed pasture and upland tropical scrub</b>	Microhabitat <b>Pasture near cattle sheds and human habitation on outskirts of</b>	Method of Storage until Inoculated <b>Mosquitoes held alive for 48 hours</b>
Footnotes		

**Section III - Method of Isolation**

Inoculation Date  
**12/28/1955**

Animal (Details will be in Section 6)  
**nb mice**

Route Inoculated <b>Intracerebral</b>	Reisolation <b>Yes</b>
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Other Reasons  
**No identical strain in laboratory at time of original inoculation**

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)	

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**Stability of Infectivity (effects)**

pH (infective range)

Lipid Solvent (ether - % used to test)	After Treatment Titer	Control Titer
Lipid Solvent (chloroform) <b>1:20</b>	After Treatment Titer <b>&lt;3.9 dex</b>	Control Titer <b>6.7 dex</b>
Lipid Solvent (deoxycholate) <b>1:1000</b>	After Treatment Titer <b>&lt;3.9 dex</b>	Control Titer <b>7.0 dex</b>
Other (formalin, radiation)		

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**Virion Morphology**

Shape	Dimensions	
Mean nm	Range nm	
Measurement Method	Surface Projections/Envelope	Nucleocapsid Dimensions, Symmetry

**Morphogenesis**

Site of Constituent Formation in Cell

Site of Virion Assembly

Site of Virion Accumulation

Inclusion Bodies

Other

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**Hemagglutination**

Hemagglutination

Antigen Source

Erythrocytes (species used)

**Yes**

**SMB ext. by sucrose-acetone**

pH Range

pH Optimum

**6.0-6.6**

Temperature Range

Temperature Optimum

**27dC**

Remarks

Serologic Methods Recommended

**HI, CF, NT**

Footnotes

Immune Sera or Antigens	Batai Antigen				Batai Immune Sera			
	HI		CF		HI		CF	
	Ht/Ho	Ratio	Ht/Ho	Ratio	Ht/Ho	Ratio	Ht/Ho	Ratio
Chittoor	160/160	1	512/512	1	320/320	1	64/64	1
Calovo	40/40	1	128/256	1/2	1280/1280	1	64/64	1
Bunyamwera	10/320	1/32	64/64	1	NA		64/64	1
Cache Valley	80/160	1/2	128/128	1	160/1280	1/8	16/32	1/2
Ilesha	20/640	1/32	8/64	1/8	NA		8/32	1/4
Germiston	<10/1280	>1/128	<4/32	>1/8	NA		<4/32	>1/8
Kairi	10/NA		8/256	1/32	NA		<4/32	>1/8
Wyeomyia	10/NA		16/>256	>1/16	NA		<4/32	>1/8
Guaroa	<10/640	>1/64	4/>256	>1/64	NA		<4/32	>1/8

NA = Not available

#### NEUTRALIZATION TEST

Batai virus is weakly neutralized by hyperimmune rabbit serum to Bunyamwera virus; conversely Bunyamwera virus is neutralized by Batai virus antisera. Batai virus is not neutralized by rabbit antisera prepared to JE, Ntaya, Zika, Ilheus, Uganda S, Wyeomyia, West Nile, Semliki, Sindbis, Mayaro, Tembusu (MM1775), Bebaru (MM2354), Bakau (MM2325), Ketapang (MM2549), chikungunya and Uruma viruses.

Cross-neutralization studies have indicated that Ilesha virus is a subtype of Batai virus [13]. SIRACA considers Calovo virus to be a strain of Batai virus [14].

## 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)	
Vero (CL)	SM 14				2	2 mm	6.0* (8)	
LLC-MK2 (CL)					2	3 mm	8.2 (8)	
PS (CL)	SM12 V1	4	4+		5	0.3 mm (11)		

\* Expressed in dex

## Section VII - Natural Host Range (Additional text can be added below table)

Vertebrate (species and organ) and arthropod	No. isolations/No. tested	No. with antibody/No. tested Test used	Country and region
Culex (Culex) gelidus	1/461 pools		Malaya, Malaysia
Aedes vexans	1		Thailand (3)
Cx bitaeniorhynchus	1/33 pools		India (4)
Anopheles subpicutus	1/24 pools		
Anopheles tesellatus	3/20 pools		
Anopheles maculipennis	(Calovo)		Czechoslovakia (7)
An maculipennis	1		Ukrainian SSR, USSR (9) (Olyka virus)
Aedes punctor	1		
Man		6/261 NT	Malaya, Malaysia

Wild birds (11 species)		100/628 NT	Thailand (3)
Mus cervicolor		16/29 NT	
Rattus exulans		4/11 NT	
Rattus rattus		117/601 NT	
Bandicota indica		17/110 NT	
Cynopterus sphinx		8/311 NT	
Man		4/185	India (5)
Goats		71/170	
Sheep		44/91	
Camels		28/28	
Cattle		70/115	
Buffalo		15/18	
Cows		28/3,180	Finland (10)
Reindeer		0/683	
Aedes nocturnus	1		Phnom-Penh, Cambodia (12)

**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 log <sub>10</sub> /ml
Mice (nb)	SM 12	ic 0.015	Death	5	8.5
Mice (nb)		ip			
Mice (nb)		sc			
Mice (wn)	SM 6	ic 0.03	Death	3-5	5.0
Mice (wn)		ip			
rabbits (ad)	SM 5	ip 1.0X4	NT antibody		

**Section IX - Experimental Arthropod Infection and Transmission**

Arthropod species & virus source(a)	Method of Infection log <sub>10</sub> /ml (b)		Incubation period (c)		Transmission by bite (d)		Assay of arthropod, log <sub>10</sub> /ml (e)		
	Feeding	Injected	Days	°C	Host	Ratio	Whole	Organ	System

**Section X - Histopathology**

Character of lesions (specify host)

Inclusion Bodies

Intranuclear

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) <b>Malaysia; India (6); Thailand (3); Czechoslovakia (7); Soviet Ukraine, USSR (9); Cambodia (12).</b>
Suspected (Antibody only detected) <b>Finland (10)</b>

### Section XIII - References

<ol style="list-style-type: none"><li>1. Director, Inst. Med. Res., Kuala Lumpur, Fed. of Malaya. Personal communication. 1957.</li><li>2. Director, Rockefeller Foundation Laboratory. Personal communication. 1960; 1961.</li><li>3. Yuill, T.M. and Russell, P.K. Personal communication. 1972.</li><li>4. Singh, K.R.P. and Pavri, K.M. 1966. Ind. J. Med. Res. 54:220-224.</li><li>5. Pavri, K.M. and Sheikh, B.M. 1966. Ind. J. Med. Res. 54:225-228.</li><li>6. Work, T.H. Personal communication.</li><li>7. Bardos, V. and Cupkova, E. 1962. J. Hyg. Epid. Microbiol. and Immunol. 6:186-192.</li><li>8. Stim, T.B. 1969. J. Gen. Virol. 5:329-338.</li><li>9. Gaidamovich, S. Ya, et al. 1973. Acta Virol. 17:444.</li><li>10. Brummer-Korvenkontio, M. 1973. Ann. Med. Exp. Biol. Fenn. 51:158-161.</li><li>11. Cogate, S.S. 1976. Ind. J. Med. Res. 64:83-86.</li><li>12. Salaun, J.J. Personal communication. 1977.</li><li>13. Hunt, A.R. and Calisher, C.H. 1979. Am. J. Trop. Med. Hyg. 28:740-749.</li><li>14. Calisher, C.H., et al. 1985. To be submitted.</li></ol>
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### Remarks

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