Virus Name: Bebaru	Abbreviation: BEBV

Status
Possible Arbovirus

Select Agent
No

SALS Level
2

SALS Basis
Results of SALS surveys and information from the Catalogue.

Other Information

Antigenic Group
A

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation
MM2354

Accession Number

Original Date Submitted
1/25/1984

Family
Togaviridae

Genus
Alphavirus

Information From
Elisberg/Buescher

Address
Dept. of Virus Diseases, WRAIR, Washington, D.C. 20012

Information Footnote
Reviewed by editor

Section II - Original Source

Isolated By (name)
US Army Med. Res. Unit (1)

Isolated at Institute
Kuala Lumpur, Malaya, Malaysia

Host Genus
Culex (Lophoceraomyia) spp.

Species

Host Age/Stage
Adult

Sex
Female

Isolated From

Isolation Details

Signs and Symptoms of Illness

Arthropod

Time Held Alive before Inoculation

Collection Method
From human subject

Collection Date
2/9/1956

Place Collected (Minimum of City, State, Country)
Rantau Panjang, Malaya, Malaysia

Latitude
3° 3' N

Longitude
101° 23' E

Macrohabitat
Nipah palm-mangrove swamp

Microhabitat
Clearing in swamp, remote from human habitation

Method of Storage until Inoculated
Mosquitoes held alive for 48 hours

Footnotes

Section III - Method of Isolation

Inoculation Date
2/11/1956

Animal (Details will be in Section 6)
nb mice

Route Inoculated
Intracerebral

Reisolation
No

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)	

Stability of Infectivity (effects)

pH (infective range)

Lipid Solvent (ether - % used to test)	After Treatment Titer	Control Titer
Lipid Solvent (chloroform) **1:20**	After Treatment Titer **4.4 dex**	Control Titer **8.6 dex**
Lipid Solvent (deoxycholate) **1:1000**	After Treatment Titer **<3.6 dex**	Control Titer **8.6 dex**

Other (formalin, radiation)

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	

Hemagglutination

Hemaggiutination **Yes**	Antigen Source **SM serum ext. by acetone-ether**	Erythrocytes (species used) **Goose**
pH Range **6.2-7.0**	pH Optimum **6.2**	
Temperature Range **4dC-26dC**	Temperature Optimum **4dC**	

Remarks

Serologic Methods Recommended
CF, HI, NT

Footnotes

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

Immune Sera or Antigens	Bebaru Antigen			Bebaru Immune Sera		
	CF		NT	CF		NT
	Ht/Ho	Ratio	Ht/Ho	Ht/Ho	Ratio	Ht/Ho
Getah	32/256	1/8	1.4/4.5	128/256	1/2	1.4/4.4
Sindbis	16/128	1/8	<0.8/3.3	32/256	1/8	0.3/4.4
Chikungunya	32/64	1/2	1.2/2.4	32/256	1/8	0.8/4.4
Semliki	16/128	1/8	2.4/3.0	128/256	1/2	1.0/4.4
WEE	NA [+]		NA	<4/256	>1/64	NA
EEE	NA		NA	32/256	1/8	NA
Mayaro	NA		1.3/4.4	NA		1.9/4.4
Sagiyama	NA		2.0/3.4	NA		2.6/4.4

CF: Guinea pig antisera (3 inoculations)

NT: Rabbit antisera; LNI given in dex

NA: Not available

Considered to be subtype of Getah [2] .

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	
		Day (c)	Extent (d)	Titer TCD50/ml (e)	Day (c)	Size (f)	Titer PFU/ml (e)	+/- (g)	
Vero (CL)	SMB 7				3	2 mm	9.1* (3)		
LLC-MK2 (CL)					3	2 mm	9.1 (3)		
BHK-21 (CL)	SMB 6	1	4+	>9.3* (4)					

* 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
Cx (Lophoceraomyia) spp.	1/7 pools (1,563 mosq.)		Rantau Panjang, Malaya, Malaysia
Ae butleri complex	1/22 pools (10,737 mosq.)		
Man		31/97 * NT	Kuala Lumpur, Malaya, Malaysia
Man		25/72 NT	Kuantan, Malaya, Malaysia
Man		42/92 NT	Rantau Panjang, Malaya, Malaysia
Mosquitoes	1		Australia (5)

* 1.8 dex neutralizing antibody

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)	SM 7	ic 0.015	Death	2	10
Mice (nb)		ip			
Mice (nb)		sc			
Mice (wn)	SM 6	ic 0.03	No disease		
Mice (wn)	SM 10	ip 0.2	No disease		
rabbits (ad)	SM 8		No disease; antibodies		
guinea pigs (ad)			No disease; antibodies		

Section IX - Experimental Arthropod Infection and Transmission

Arthropod species & virus source(a)	Method of Infection log10/ml (b)		Incubation period (c)		Transmision by bite (d)		Assay of arthropod, log10/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	

Reported

Clinical Manifestations

Number of Cases — Category (i.e. febrile illness, etc.)

Section XII - Geographic Distribution

Known (Virus detected)
Malaysia

Suspected (Antibody only detected)

Section XIII - References

1. Director, Inst. Med. Res., Kuala Lumpur, Fed. of Malaya. Personal communication. 1957.
2. Calisher, C.H., et al. 1980. Intervirology 14:229-232.
3. Stim, T.B. 1969. J. Gen. Virol. 5:329-338.
4. Karabatsos, N. and Buckley, S.M. 1967. Am. J. Trop. Med. Hyg. 16:99-105.
5. JCSMR, Canberra, Australia. 1975. Unpublished data.
6. The Subcommittee on Arbovirus Laboratory Safety of The American Committee on Arthropod-Borne Viruses. 1980. Am. J. Trop. Med. Hyg. 29:1359-1381.

Remarks