Virus Name: Murutucu	Abbreviation: MURV

Status
Arbovirus

Select Agent
No

SALS Level
2

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

Other Information

Antigenic Group
C

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation
BeAn 974

Accession Number

Original Date Submitted
1/27/1985

Family
Bunyaviridae

Genus
Bunyavirus

Information From
Robert E. Shope

Address
Yale Arbovirus Research Unit, New Haven, Connecticut

Information Footnote
Reviewed by editor

Section II - Original Source

Isolated By (name)
Belem Virus Lab. (1)

Isolated at Institute
Belem, Para, Brazil

Host Genus
Cebus apella, sentinel

Species

Host Age/Stage
Adult

Sex
Male

Isolated From	Isolation Details
Serum/Plasma	

Signs and Symptoms of Illness

Arthropod

Time Held Alive before Inoculation

Collection Method
Femoral venipuncture

Collection Date
12/5/1955

Place Collected (Minimum of City, State, Country)
Instituto Agronomico do Norte Forest, Brazil

Latitude
2° S

Longitude
48° W

Macrohabitat
Old secondary forest

Microhabitat
Wire cage, 5 meters from ground

Method of Storage until Inoculated

Footnotes

Section III - Method of Isolation

Inoculation Date
12/5/1955

Animal (Details will be in Section 6)
nb mice

Route Inoculated
Intracerebral

Reisolation
Yes

Other Reasons

Homologous Antibody Formation by Source Animal
Yes

Test(s) Used
NT

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)	After Treatment Titer	Control Titer

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	Antigen Source	Erythrocytes (species used)
Yes	**SM serum; hamster serum (7); SM liver ext. by acetone; sucrose-acetone**	**Goose**
pH Range	pH Optimum	
5.7-6.4	**6.0**	
Temperature Range	Temperature Optimum	
	27dC	

Remarks

Serologic Methods Recommended
HI, CF, NT

Footnotes

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

Related by HI and NT to Marituba; by CF to Oriboca. [2] , [3]

SIRACA has antigenically classified Murutucu and Restan viruses as subtypes of Marituba virus [12] .

Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)
blood (LV)

Lab Methods of Virus Recovery (ALL ISOLATIONS)
newbon 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)	
HeLa(CL), HeLa S3 (CL)			CPE (4)						
Det-6(CL), HEp-1(CL)			CPE (4)						
HEp-2 (CL), Human embryo intestine(CL)			CPE (4)						
Rhesus monkey kidney(PC)						Plaques (5)			
BHK-21(CL)	SMB 13				5-6	Plaques	5.5*(10)		
Chick embryo(PC)			CPE (10)						
Vero(CL)			CPE (10)		2	1 mm	7.0(13)		
LLC-MK2(CL)	P-11				2	3 mm	7.3(13)		

* 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
Man	3	53/1,360 HI	Para and Amazonas, Brazil
Sentinel Cebus	18		Para, Brazil
Monkey		3/54 HI	
Sentinel mouse	63/16,315		
Nectomys squamipes	2		
Oryzomys sp.	1		
Proechimys guyannensis	9		
Caluromys philander		1/33 HI	
Bradypus tridactylus	1		
Didelphis marsupialis	2	6/80 HI	
Marmosa spp.	2	5/81 HI	
Metachirus nudicaudatus		1/9 HI	
Culex aikenii	3		
Cx portesi	2		
Cx portesi	3		French Guiana (11)
All other Culex	5		Para, Brazil
Sabethines	1		
Cq. venezuelensis	1		French Guiana (11)

Mammal isolations were mainly from blood.

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)		ic 0.02	Death	1.5	9.0
Mice (nb)		ip 0.02	Death, viremia	1.5	8.8
Mice (nb)		sc			
Mice (wn)		ic 0.03	Death, viremia	2.2	9.5
Mice (wn)		ip 0.03	Death	3.0	8.5
rhesus monkey (ad)		sc	Viremia (7)		
hamsters (ad)		ic	Death (8)	3.0	
chick		iv	Viremia (9)		

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
Aedes aegypti	Following parenteral inoculation, high virus titer detected in salivary glands after several passages (+ 4.0 dex) (9).								
An. quadrimaculatus	Following parenteral inoculation, propagation failed after two passages (9).								

Section X - Histopathology

Character of lesions (specify host)
ad, nb mice, ic and ip: brain-diffuse neuronal degeneration + mononuclear infiltration; liver - necrosis, hyaline degeneration of hepatic cells. Councilman bodies, discrete Hyperplasia of Kupffer cells (6).

Inclusion Bodies — Intranuclear
Lower Vertabrates

Organs/Tissues Affected
Brain (LV), liver (LV)

Category of tropism
Neurotropic and viscerotropic

Section XI - Human Disease

In Nature — Residual — Death
Reported

Subclinical — Overt Disease
Reported

Clinical Manifestations
Fever (R), headache (S), myalgia (S), arthralgia(S), leukopenia(S)

Number of Cases
Three

Category (i.e. febrile illness, etc.)
Febrile illness

Section XII - Geographic Distribution

Known (Virus detected)
Brazil; French Guiana

Suspected (Antibody only detected)

Section XIII - References

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Remarks