

<b>Virus Name: Murutucu</b>		<b>Abbreviation: MURV</b>
Status <b>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>C</b>		

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

Prototype Strain Number / Designation <b>BeAn 974</b>	Accession Number	Original Date Submitted <b>1/27/1985</b>
Family <b>Bunyaviridae</b>	Genus <b>Bunyavirus</b>	
Information From <b>Robert E. Shope</b>	Address <b>Yale Arbovirus Research Unit, New Haven, Connecticut</b>	
Information Footnote <b>Reviewed by editor</b>		

**Section II - Original Source**

Isolated By (name) <b>Belem Virus Lab. (1)</b>	Isolated at Institute <b>Belem, Para, Brazil</b>	
Host Genus <b>Cebus apella, sentinel</b>	Species	Host Age/Stage <b>Adult</b>
Sex <b>Male</b>		
<u>Isolated From</u>	<u>Isolation Details</u>	
<b>Serum/Plasma</b>		
Signs and Symptoms of Illness	Arthropod	
Time Held Alive before Inoculation		
Collection Method <b>Femoral venipuncture</b>	Collection Date <b>12/5/1955</b>	
Place Collected (Minimum of City, State, Country) <b>Instituto Agronomico do Norte Forest, Brazil</b>		
Latitude <b>2° S</b>	Longitude <b>48° W</b>	
Macrohabitat <b>Old secondary forest</b>	Microhabitat <b>Wire cage, 5 meters from ground</b>	Method of Storage until Inoculated
Footnotes		

**Section III - Method of Isolation**

Inoculation Date <b>12/5/1955</b>	
Animal (Details will be in Section 6) <b>nb mice</b>	
Route Inoculated <b>Intracerebral</b>	Reisolation <b>Yes</b>
Other Reasons	
Homologous Antibody Formation by <u>Source Animal</u> <b>Yes</b>	
Test(s) Used <b>NT</b>	
Footnotes	

**Section IV - Virus Properties**

<b>Physicochemical</b>		
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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<b><u>Stability of Infectivity (effects)</u></b>		
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)		
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<b><u>Virion Morphology</u></b>		
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

Hemagglutination <b>Yes</b>	Antigen Source <b>SM serum; hamster serum (7); SM liver ext. by acetone; sucrose-acetone</b>	Erythrocytes (species used) <b>Goose</b>
pH Range <b>5.7-6.4</b>	pH Optimum <b>6.0</b>	
Temperature Range	Temperature Optimum <b>27dC</b>	
Remarks		
Serologic Methods Recommended <b>HI, CF, NT</b>		
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 +/- (g)
		Day (c)	Extent (d)	Titer TCD50/ml (e)	Day (c)	Size (f)	Titer PFU/ml (e)	
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

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		
<i>Nectomys squamipes</i>	2		
<i>Oryzomys</i> sp.	1		
<i>Proechimys guyannensis</i>	9		
<i>Caluromys philander</i>		1/33 HI	
<i>Bradypus tridactylus</i>	1		
<i>Didelphis marsupialis</i>	2	6/80 HI	
<i>Marmosa</i> spp.	2	5/81 HI	
<i>Metachirus nudicaudatus</i>		1/9 HI	
<i>Culex aikenii</i>	3		
<i>Cx portesi</i>	2		
<i>Cx portesi</i>	3		French Guiana (11)
All other <i>Culex</i>	5		Para, Brazil
Sabethines	1		
<i>Cq. venezuelensis</i>	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 log <sub>10</sub> /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 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
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 BodiesIntranuclear**Lower Vertabrates**

Organs/Tissues Affected

**Brain (LV), liver (LV)**

Category of tropism

**Neurotropic and viscerotropic****Section XI - Human Disease**In Nature  
**Reported**

Residual

Death

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**

1. Causey, O.R., et al. 1961. Am. J. Trop. Med. Hyg. 10:227-249.
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6. De Paola, D. 1963. An. Microbiol. 11:187-208.
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12. Calisher, C.H., et al. 1985. Intervirology. To be submitted.
13. Stim, T.B. 1969. J. Gen. Virol. 5:329-338.
14. The Subcommittee on Arbovirus Laboratory Safety of The American Committee on Arthropod-Borne Viruses. 1980. Am. J. Trop. Med. Hyg. 29:1359-1381.

**Remarks**