Virus Name: Mucambo	Abbreviation: MUCV

Status
Arbovirus

Select Agent
No

SALS Level
3

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

Other Information
Hepa Filtration, Vaccination Recommended

Antigenic Group
A

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation
BeAn 8

Accession Number

Original Date Submitted
2/27/1985

Family
Togaviridae

Genus
Alphavirus

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 Laboratory (1)

Isolated at Institute
Belem, Para, Brazil

Host Genus
Cebus apella (3), sentinel

Species

Host Age/Stage
Adult

Sex
Not Answered

Isolated From	Isolation Details
Serum/Plasma	

Signs and Symptoms of Illness

Arthropod

Time Held Alive before Inoculation

Collection Method
Femoral venipuncture

Collection Date
12/27/1954

Place Collected (Minimum of City, State, Country)
Oriboca Forest, Brazil

Latitude
2° S

Longitude
48° W

Macrohabitat
Virgin forest

Microhabitat
Wire cage 4 meters above ground

Method of Storage until Inoculated

Footnotes

Section III - Method of Isolation

Inoculation Date
12/27/1954

Animal (Details will be in Section 6)
nb mice

Route Inoculated
Intracerebral

Reisolation
Not tried

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	**SMB ext. by sucrose-acetone**	**Goose**
pH Range	pH Optimum	
6.0-6.4	**6.2**	
Temperature Range	Temperature Optimum	
	37dC	

Remarks

Serologic Methods Recommended
HI, CF, NT

Footnotes

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

Closely related to VEE [1] of Group A. Considered an enzootic subtype of VEE. All strains of VEE reported from Trinidad through 1970, except the Trinidad Donkey strain, are considered to be Mucambo and are listed under Natural Host Range. See Reference [17] .
Mucambo virus was antigenically classified as a subtype of VEE virus. Tonate virus and a relatively recent isolate were classified as varieties of Mucambo virus [18] .

Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)
Blood/serum (LV), organ pool (usually consisted of liver, spleen, heart, kidney, lungs, and brain (LV)

Lab Methods of Virus Recovery (ALL ISOLATIONS)
Vero E6 cell culture

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)	
Chick, turkey embryo (PC)	P-4				2-3	Plaques	9.7*(14)		
Mouse embryo (PC)					3	Plaques	9.2 (14)		
BHK-21 (CL)						Plaques (15)			
Vero (CL)						Plaques (15)			
GMK (CL)			CPE (14)						
HEp-2 (CL)			CPE (14)						

* 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	5		Para Brazil
Man	2		Surinam (5)
Sentinel Cebus	32		Para, Brazil
Sentinel mice	78/16,315		Para, Brazil, 63 in Trinidad (6), 5 Surinam (7)
Sentinel mice	1		Sao Paulo, Brazil (8)
Sentinel white rat	1/1		Para, Brazil
Sentinel Oryzomys	5		Trinidad (6)
Oryzomys laticeps	14		Trinidad
Oryzomys capito (blood)	23 *		Para, Brazil
Proechimys guyannensis	8		Para Brazil
Nectomys squamipes	1		
Zygodontomys brevicauda	9		Trinidad (6)
Heteromys anomalus	9		Trinidad
Marsupials (3 genera)	4		Para, Brazil
Marmosa mitis	1		Trinidad (6)
Pipra erythrocephala (bird)	1	HI antibody negligible in forest birds	Para Brazil

Mosquitoes: Culex portesi 13 Belem, 103 Trinidad (6), 31 French Guiana (9), 7 Surinam (7); all other Culex 7 Belem, 30 Trinidad, 12 French Guiana; also from Aedes, Mansonia, Haemagogus, Sabethini, Wyeomyia

* Of the 23 isolates, 22 were from blood and 1 from urine.

NOTE: HI and NT antibody common in rodents, marsupials, monkeys and edentates of forests of Para, Brazil. HI and NT antibody >20% in man in Amazonas, Brazil, French Guiana.

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)	P-1	ic 0.02	Death	1.5	10.7+
Mice (nb)		ip 0.02	Death	1.5	10.7+
Mice (nb)		sc			
Mice (wn)		ic 0.03	Death	6.6	10.5+
Mice (wn)		ip 0.03	Antibody (some die)		
hamsters (ad)		ic, sc	Death (11,12)		
horse (10 mo.)	P-8	sc 0.05	Fever, leucopenia, antibody (1)		
cynomolgus monkey		ic	Fever, viremia, paralysis, encephalitis (10)		
chicks		iv	Viremia (13)		

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
Ae. aegypti virus parenterally inoc.; virus was taken through 5 serial passages in salivary glands (13)									
Ae. aegypti transmitted to mice (5)									
Naturally infected Culex portesi mosquitoes transmitted to mice (16)									

Section X - Histopathology

Character of lesions (specify host)
Hepatocytic vacuolation, hemorrhagic glomerulitis and congestion of renal tissue in white mice (L.B. Dias).

Inclusion Bodies — Intranuclear

Organs/Tissues Affected
Liver (LV), kidney (LV)

Category of tropism

Section XI - Human Disease

In Nature — Residual — Death
Significant

Subclinical — Overt Disease
Reported

Clinical Manifestations
Fever (S), headache (S), prostration (R), myalgia (S)

Number of Cases
Nine

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

Section XII - Geographic Distribution

Known (Virus detected)
Brazil, Trinidad, Surinam, French Guiana

Suspected (Antibody only detected)

Section XIII - References

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Remarks