Virus Name: Bushbush	Abbreviation: BSBV

Status
Arbovirus

Select Agent
No

SALS Level
2

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

Other Information

Antigenic Group
Capim

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation
TRVL 26668

Accession Number

Original Date Submitted
2/2/1985

Family
Bunyaviridae

Genus
Bunyavirus

Information From
Trinidad Req. Virus Lab

Address
P.O. Box 164, Port of Spain, Trinidad

Information Footnote
Reviewed by editor

Section II - Original Source

Isolated By (name)
TRVL (1)

Isolated at Institute
Port of Spain, Trinidad

Host Genus
Culex (Aedinus) accelerans (792 mosquitoes)

Species

Host Age/Stage
Adult

Sex
Female

Isolated From

Isolation Details

Signs and Symptoms of Illness

Arthropod

Time Held Alive before Inoculation

Collection Method
Human bait

Collection Date
10/6/1959

Place Collected (Minimum of City, State, Country)
Nariva County, Trinidad

Latitude
10° 24' N

Longitude
61° 3' W

Macrohabitat
Bush Bush Forest, eastern Trinidad

Microhabitat
Semi-evergreen seasonal forest and swamp forest

Method of Storage until Inoculated
Held alive overnight ambient temp.; then at -55dC until processed

Footnotes

Section III - Method of Isolation

Inoculation Date
10/13/1959

Animal (Details will be in Section 6)
nb mice

Route Inoculated
Intracerebral

Reisolation
No

Other Reasons
No other strains of this virus have been isolated by this laboratory

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)	After Treatment Titer	Control Titer
Lipid Solvent (deoxycholate)	After Treatment Titer **<2.5 dex**	Control Titer **5.6 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	Antigen Source	Erythrocytes (species used)
No	**SMB ext. by acetone-ether; sucrose-acetone**	**Goose**
pH Range	pH Optimum	
Temperature Range	Temperature Optimum	

Remarks
HA has been prepared by the Belem Virus Lab from SMB of strain BeAn 20076 by the sucrose-acetone technique (7).

Serologic Methods Recommended
CF, NT

Footnotes
HA has been prepared by the Belem Virus Lab from SMB of strain BeAn 20076 by the sucrose-acetone technique (7).

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

HI:	Hyperimmune mouse serum versus Bushbush does not inhibit hemagglutination of: EEE, WEE, VEE, Mayaro, SLE, Ilheus, yellow fever, dengue, Catu, Guama, Moju. (The test with Catu, Guama and Moju was done by the Belem Virus Laboratory.)
CF:	Crude saline antigen of mouse brain did not fix complement in the presence of mouse hyperimmune sera prepared with the following agents: Kairi, Ieri, Tacaiuma, Murutucu, SLE, Aruac, Anopheles A, Itaqui, Cache Valley, Nepuyo, Turlock, Caraparu, Bimiti, Tacaribe, Bwamba, Simbu, Wyeomyia, EEE, Rift Valley fever, Catu, Melao, WEE, Bunyamwera, Sindbis, Oropouche, VEE, Oriboca, Guama, Lukuni, Manzanilla, Marituba, EMC, Triniti, Guaroa, Apeu, GD VII.

Bushbush mouse hyperimmune serum did not fix complement with the following sucrose-acetone antigens: Guama, Catu, Moju, Capim, An 20525, but reacted to 1/4 of homologous titer with Guajara. (This test was done at the Belem Virus Laboratory.) Strain BeAn 20076 from Belem is closely related to TRVL 26668 by CF, but cannot be assumed identical until further testing is done [7] .

NT:	Bushbush in baby mice ic test was neutralized slightly by Bimiti and Catu hyperimmune mouse sera (about 1/3 of homologous neutralization).

SIRACA has antigenically classified Bushbush virus as the prototype virus of the Bushbush complex, one of five complexes comprising the Capim serogroup. The registered Benfica virus and an unregistered virus were judged to be subtypes of Bushbush virus [8] .

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)	
Mouse embryo(PC)						Plaques (4)			
Vero (CL)	P-13				6	1 mm	4.8* (6)		
LLC-MK2 (CL)					1	1 mm	7.7 (6)		

No evidence of multiplication in hamster kidney (PC) and KB (CL) cell cultures.

* 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
Sentinel mouse	7		IAN Forest, Belem, Brazil
Sentinel mouse	15		Para, Brazil (2, 3)
Culex (Ads) accelerans	1/7,000 pools		Bush Bush Forest, Trinidad
Culex spp.	1		Para, Brazil (2, 3)

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)	MB 10	ic 0.02	Death	3-5	5.6
Mice (nb)		ip 0.03	Death	5-7	>5.0
Mice (nb)		sc			
Mice (wn)	MB 13	ic 0.03	Death	10	<1.0
Mice (wn)		ip 0.2	No mortality		
embryonated eggs			No multiplication		

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
Two transmissions by naturally infected Culex spp., Para, Brazil (2,3).									
Ae aegypti and Cx quinquefasciatus inoculated parenterally, carried strain TRVL 26668 through five serial salivary gland passages (5).									

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)
Trinidad,Brazil

Suspected (Antibody only detected)

Section XIII - References

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Remarks