Virus Name: Maguari	Abbreviation: MAGV

Status
Arbovirus

Select Agent
No

SALS Level
2

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

Other Information

Antigenic Group
Bunyamwera

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation
BeAr 7272

Accession Number

Original Date Submitted
2/27/1985

Family
Bunyaviridae

Genus
Bunyavirus

Information From
R.E. Shope and L. Whitman

Address
Yale Arbovirus Research Unit, New Haven, Connecticut

Information Footnote
Reviewed by editor

Section II - Original Source

Isolated By (name)
Belem Virus Laboratory

Isolated at Institute
Belem, Para, Brazil

Host Genus
Mixed mosquito pool*

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
6/1/1957

Place Collected (Minimum of City, State, Country)
Utinga forest, Brazil

Latitude
1° 28' S

Longitude
48° 27' W

Macrohabitat
Watershed forest

Microhabitat
Ground level

Method of Storage until Inoculated
At -15dC in mechanical freezer

Footnotes

Section III - Method of Isolation

Inoculation Date
6/7/1957

Animal (Details will be in Section 6)
nb mice

Route Inoculated
Intracerebral

Reisolation
Not tried

Other Reasons

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	Control Titer

Other (formalin, radiation)

Virion Morphology

Shape	Dimensions **98 nm**	
Mean nm	Range nm	
Measurement Method **Electron microscopy (8)**	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	**6.1**	
Temperature Range	Temperature Optimum	
22dC - 37dC	**27dC or 37dC**	

Remarks
*** Contained Aedes scapularis 2, Ae serratus 5, Ae sexlineatus 2, Mansonia sp. 1, and Psorophora ferox 12.**

Serologic Methods Recommended
CF, HI, and NT

Footnotes
*** Contained Aedes scapularis 2, Ae serratus 5, Ae sexlineatus 2, Mansonia sp. 1, and Psorophora ferox 12.**

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

Maguari is related to Cache Valley and Tensaw. The following data are from Whitman at the Rockefeller Foundation Virus Laboratories, New York:

Cross-HI tests between Maguari, Tensaw and Cache Valley Sera

Sera	Antigens		
	Maguari BeAr 7272	Cache Valley(6V663)	Tensaw A9-171b
Maguari Mouse (Tr20659 **	160	40	40
Cache Valley (6V633) Rabbit	40	160	40
Tensaw (A9-171b)	40	40	160

** Tr20659 (ex Trinidad) and BeAr 7272 have previously been shown to be indistinguishable.

Cross-neutralization tests in baby mice. Dex virus neutralized

Sera	Viruses	
	Maguari (BeAr 7272)	CV (6V633)
Maguari Mouse	3.5	2.2
Cache Valley Mouse	2.3	4.6
Cache Valley Rabbit	2.3	3.4

SIRACA has antigenically classified Maguari virus as a subtype of Cache Valley virus. Playas virus and an unregistered virus were also classified as subtypes of Cache Valley virus. The unregistered isolate from Argentina was considered to be a variety of Maguari virus [18] .
For additional information on antigenic relationships, see Reference [19] .

Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)
blood (M)(LV), cerebro spinal fluid (M), CNS (M)(LV), heart (M) (LV), lung (M)(LV), liver (M)(LV), spleen (M)(LV), kidney (M) (LV), skeletal muscles (M)

Lab Methods of Virus Recovery (ALL ISOLATIONS)
newborn and weaning mice and hamsters

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-2				3-5	Plaques	6.6(a)(16)		
BHK-21 (CL)	P-20				4	Plaques	>7.2 (16)		
HeLa (CL)	P-7		CPE	5.7(a)(14)					
Vero (CL)					4	7 mm	6.5 (15)		
LLC-MK2 (CL)					2	2 mm	6.0 (15)		

(a) 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		50/78 NT	Brazil; French Guiana
Man		96/1,560 HI	
Man		14/831 HI	Argentina (5, 6, 9)
Man		95/1,063 HI	Peru (9)
Man		13/63 NT	Colombia (11)
Man		1/17 HI	Para, Brazil
Sentinel mice	2/16,315		Para, Amapa, Brazil
Horses	1		Guyana (10)
Horses		18/141 HI	Para, Brazil
Horses and cattle		11/15 NT	Para, Brazil
Horses and cattle		8/12 HI,NT	Sao Paulo, Brazil
Horses and cattle		46/153 HI	Cordoba, Argentina(6)
Water buffalo		44/527 HI	Para and Amazonas, Brazil
Sheep		2/15 HI	Para, Brazil
Birds		2/897 HI	
Rodents		0/286 HI	
Horses	2		Colombia (17)

Mosquitoes: Ae fulvus 3, Belem; Ae scapularis 2, Belem, 1 Trinidad (12), 1 Colombia (11); Ae serratus, 1 Belem, 1 Trinidad; other Aedes, 1 Belem, 1 Colombia, 1 Argentina (CbaAr 426); Culex taeniopus, 1 Belem, 1 Trinidad (10); Anopheles 1 Belem; Wyeomyia 1 French Guiana (13); Psorophora 1 Belem.

243 isolates of Maguari virus were obtained from mosquitoes and sentinel hamsters exposed in coastal Ecuador from 1974-1978 (23).

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-6	ic 0.02	Death	3.0	8.7
Mice (nb)	P-3	ip 0.02	Death, viremia (7)	4.0	8.3
Mice (nb)		sc			
Mice (wn)		ic 0.03	Antibody		
Mice (wn)		ip 0.03	Antibody		
hamsters (ad)		ip, sc	Nonlethal		

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 scapularis fed on mice transmitted to mice after 16 days (7)									
A. serratus,	)								
Culex Quinquefasciatus	)Parenterally inoculated; transmitted to mice after 7-23 days.								
Cx nigripalpus	)								
Cx corniger	)								
Cq. arribalzagai	)Parenterally inoculated; maintained virus for 10-22 days								
Cq. Venezuelensis	)								

Section X - Histopathology

Character of lesions (specify host)
ad, nb mice: encephalitis only (L.B. Dias)

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)
Brazil, Trinidad, Guyana, French Guiana, Colombia, Argentina

Suspected (Antibody only detected)
Surinam (20,21), Venenzuela (22)

Section XIII - References

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NOTE: Maguari virus has been cited in the above references as "Cache Valley". Strains BeAr 7272 and TRVL 20659 have been shown to differ antigenically from the prototype and are now called "Maguari".

Remarks