

Virus Name: Apeu		Abbreviation: APEUV
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 848	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 Female		
<u>Isolated From</u>	<u>Isolation Details</u>	
Serum/Plasma		
Signs and Symptoms of Illness	Arthropod	
Time Held Alive before Inoculation		
Collection Method Femoral venipuncture	Collection Date 10/14/1955	
Place Collected (Minimum of City, State, Country) Oriboca Forest, Brazil		
Latitude 2° S	Longitude 48° W	
Macrohabitat Virgin forest, near stream	Microhabitat Wire cage, 4 meters above ground	Method of Storage until Inoculated
Footnotes		

Section III - Method of Isolation

Inoculation Date 10/14/1956	
Animal (Details will be in Section 6) nb mice	
Route Inoculated Intracerebral	Reisolation Yes
Other Reasons	
Homologous Antibody Formation by <u>Source Animal</u> 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)	
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<u>Stability of Infectivity (effects)</u>		
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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<u>Virion Morphology</u>		
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 Yes	Antigen Source SM serum.hamster serum (11); sm liver ext. by acetone, sucrose-acetone	Erythrocytes (species used) Goose
pH Range 5.7-6.4	pH Optimum 6.0	
Temperature Range	Temperature Optimum 27dC	
Remarks		
Serologic Methods Recommended CF, NT, HI		
Footnotes		

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

Most closely related to Caraparu by HI and NT, to Marituba by CF [2] , [3] .

SIRACA has antigenically classified Apeu virus as a distinct virus type in the Caraparu complex, one of four complexes comprising serogroup C [12] .

Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)
Blood (M)(LV)

Lab Methods of Virus Recovery (ALL ISOLATIONS)
Newborn 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)					4	2-3 mm	2.7 * (9)	
Vero (CL)					6	2-3 mm	4.0 (9)	

* Expressed in dex

Vertebrate (species and organ) and arthropod	No. isolations/No. tested	No. with antibody/No. tested Test used	Country and region
Man	3/2,095	152/1,362 HI	Para; Amazonas, Brazil
Sentinel Cebus	15		Para, Brazil
Sentinel mouse	30/16,315		
Caluromys philander (blood)	2		
Marmosa cinerea (blood)	1		
Aedes arborealis	1		
Ae septemstriatus	1		
Culex aikenii	2		
Other Culex	3		

Not possible to readily distinguish Caraparu from Apeu HI or NT reactions with human sera.

HI antibody between 8% and 17% found in Proechimys, Oryzomys, Marmosa, Caluromys, and Metachirus.

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	2.1	8.7
Mice (nb)		ip 0.02	Viremia, Death	2.5	8.7
Mice (nb)					
Mice (wn)		ic 0.03	Antibody		
Mice (wn)		ip 0.03	Antibody		
rhesus monkey		sc	Occasional fever, antibody (7)		
hamster (ad)	P-9	ic	Occasional death(11)		

Section IX - Experimental Arthropod Infection and Transmission

Arthropod species & virus source(a)	Method of Infection log10/ml (b)		Incubation period (c)		Transmission by bite (d)		Assay of arthropod, log10/ml (e)		
	Feeding	Injected	Days	°C	Host	Ratio	Whole	Organ	System
Aedes aegypti , Cx quinquefasciatus			Following parenteral inoculation, high virus titer detected in salivary glands after several passages (+4.0 dex) (10).						
An quadrimaculatus			Following parenteral inoculation, propagation failed after three passages (10).						

Section X - Histopathology

Character of lesions (specify host)
ad, nb mice; ic and ip: hydropic tumefaction of brain with retraction and necrosis. In some animals the liver contained small foci of hepato-cellular necrosis (6).

Inclusion Bodies

Intranuclear

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

Clinical Manifestations

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

Number of Cases

4

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

Febrile illness

Section XII - Geographic Distribution

Known (Virus detected)

Brazil

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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Remarks