

<b>Virus Name: Apeu</b>		<b>Abbreviation: APEUV</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 848</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>Female</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>10/14/1955</b>	
Place Collected (Minimum of City, State, Country) <b>Oriboca Forest, Brazil</b>		
Latitude <b>2° S</b>	Longitude <b>48° W</b>	
Macrohabitat <b>Virgin forest, near stream</b>	Microhabitat <b>Wire cage, 4 meters above ground</b>	Method of Storage until Inoculated
Footnotes		

**Section III - Method of Isolation**

Inoculation Date <b>10/14/1956</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 (11); 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>CF, NT, HI</b>		
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: hydroptic 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.
2. Casals, J. and Whitman, L. 1961. Am. J. Trop. Med. Hyg. 10:250-258.
3. Shope, R.E. and Causey, O.R. 1962. Am. J. Trop. Med. Hyg. 11:283-290.
4. Buckley, S.M. and Shope, R.E. 1961. Am. J. Trop. Med. Hyg. 10:53-61.
5. Henderson, J.R. and Taylor, R.M. 1960. J. Immunol. 84:590-598.
6. De Paola, D. 1963. An. Microbiol. 11:187-208.
7. Allen, W.P., et al. 1967. Am. J. Trop. Med. Hyg. 16:196-210.
8. Gibbs, C.J., Jr., et al. 1964. Am. J. Trop. Med. Hyg. 13:108-113.
9. Bergold, G.H. and Mazzali, R. 1968. J. Gen. Virol. 2:273-284.
10. Whitman, L. Personal communication.
11. Srihongse, S. and Johnson, K.M. 1969. Am. J. Trop. Med. Hyg. 18:273-279.
12. Calisher, C.H., et al. 1985. Intervirology. To be submitted.

**Remarks**