

<b>Virus Name: Flexal</b>		<b>Abbreviation: FLEV</b>
Status <b>Probably not Arbovirus</b>	Select Agent <b>Yes</b>	SALS Level <b>3</b>
SALS Basis <b>Results of SALS surveys and information from the Catalogue.</b>		
Other Information <b>DOC Permit Required</b>		
Antigenic Group <b>tacaribe</b>		

**SECTION I - Full Virus Name and Prototype Number**

Prototype Strain Number / Designation <b>BeAn 293022</b>	Accession Number	Original Date Submitted <b>4/13/1985</b>
Family <b>arenavirus</b>	Genus	
Information From <b>F.P. Pinheiro and Amelia P.A.T. Rosa</b>	Address <b>Instituto Evandro Chagas, FSESP, Mnistry of Health, CP-621, Belem, Para, Brazil</b>	
Information Footnote <b>Reviewed by editor</b>		

**Section II - Original Source**

Isolated By (name) <b>F. Pinheiro and Amelia P.A.T. Rosa</b>	Isolated at Institute <b>Instituto Evandro Chagas</b>	
Host Genus <b>Oryzomys bicolor</b>	Species	Host Age/Stage <b>adult</b>
Sex <b>Female</b>		
<u>Isolated From</u>	<u>Isolation Details</u>	
<b>Whole Blood</b>		
<b>Organs/Tissues</b>	<b>pool of heart, liver, spleen, and kidney</b>	
Signs and Symptoms of Illness <b>none</b>	Arthropod	
Time Held Alive before Inoculation		
Collection Method <b>hardwood trap</b>	Collection Date <b>11/6/1975</b>	
Place Collected (Minimum of City, State, Country) <b>Km. 212, Itaituba-Jacareacanga road, Para</b>		
Latitude <b>5° 18' S</b>	Longitude <b>57° 4' W</b>	
Macrohabitat <b>tropical rain forest</b>	Microhabitat <b>ground level</b>	Method of Storage until Inoculated <b>liquid nitrogen and mechanical freezer (-60dC)</b>
Footnotes		

**Section III - Method of Isolation**

Inoculation Date  
**12/12/1975**

Animal (Details will be in Section 6)  
**nb mice**

Route Inoculated  
**intracerebral**

Reisolation  
**Yes**

Other Reasons

Homologous Antibody Formation by Source Animal  
**No**

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	
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 No      Antigen Source **SMB ext. by sucrose-acetone**      Erythrocytes (species used) **goose**

pH Range **5.8 - 7.0**      pH Optimum

Temperature Range **room, 37dC**      Temperature Optimum

Remarks

Serologic Methods Recommended **CF, NT**

Footnotes

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

Virus strain BeAn 293022 was determined to be a member of the Tacaribe serogroup. Results of complement-fixation tests and PRNT are presented below.

**Complement-Fixation Test [(1)]**

Antigens	Sera							
	AMA	JUN	MAC	TCR	LCM	PIC	TAM	BeAn 293022
Amapari	64/>40 <sup>a</sup>	>64/>40	32/>40	16/>40	0	0	0	0
Junin	32/>40	>64/>40	>64/>40	16/>40	8/4	0	0	0
Machupo	8/4	>64/>40	>64/>40	16/4	0	0	0	0
Tacaribe	8/>40	>64/>40	>64/>40	>64/>40	0	0	0	0
LCM	0	0	0	0	>64/>40	0	0	0
Pichinde	0	0	0	0	0	8/4	0	0
Tamiami	0	0	0	0	0	0	>64/>40	0
BeAn 293022 (brain)	0	16/4	16/4	0	16/4	0	8/4	16/16
Bean 293022 (liver)	0	8/4	0	0	0	0	0	16/16
Normal (brain)	0	0	0	0	0	0	0	0

<sup>a</sup> Serum titer/antigen titer; 0 = <4/<4

### Plaque Reduction Neutralization Test <sup>b</sup> [2]

#### Sera

Virus	BeAn 293022	TCR	PIC	PAR	JUN	AMA	MAC	LAT	TAM
BeAn 293022	16	<4	<4	<4	<4	<4	<4	<4	<4
Tacaribe	<4	256	<4	<4					
Pichinde	<4	<4	<4	<4					
Parana	<4	<4	<4	16					

<sup>b</sup> 80% plaque reduction in vero cell cultures

### Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)  
blood (LV), pool of heart, liver, spleen, and kidney (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)	
Vero (CL)	SMB 4		No CPE		9	1mm	7.0 <sup>c</sup>	+
HEp-2 (CL)			No CPE					
Chick embryo (PC)						No plaques		

<sup>c</sup> expressed in dex

Vertebrate (species and organ) and arthropod	No. isolations/No. tested	No. with antibody/No. tested Test used	Country and region
Oryzomys bicolor (rodent; blood) *	2/2	0/2 CF	Itaituba-Jacareacanga road (Flexal), Itaituba,
Oryzomys capito (organs)	1/1	0/1 CF	Brazil, 1975
Oryzomys spp.	0/55	1/55 CF	
Proechimys spp.	0/59	3/56 CF	
Nectomys spp.	0/29	1/29 CF	
Neacomys	0/19	0/2 CF	
Sciurus	0/4	0/4 CF	
Dasyprocta aguti	0/4	0/4 CF	
Agouti paca	0/1	0/1 CF	
Rattus rattus	0/2	0/2 CF	
Marsupials	0/63		
Primates	0/13		
Reptiles	0/5		
Ungulates	0/1		
Carnivores	0/1		
Wild birds	0/530		
Man		2/88 CF	Itaituba area, Para, Brazil

Flexal virus was not isolated from 15,968 mosquitoes and phlebotomine flies inoculated as 701 pools, nor from 2,066 (36 pools) ectoparasites of which 1,752 were combed from *Oryzomys* spp. (1,500 *Gigantolaelaps oudemansi*, 33 *G. intermedia*, 5 *G. gilmorei*, 24 *Laelaps* sp., 180 *Haemolaelaps* sp. and 10 *Laelaps pilifer*).

\* Also isolated from pool of heart, liver, spleen, and kidney.



**Section XI - Human Disease**

In Nature	Residual	Death
Subclinical	Overt Disease Reported	
Clinical Manifestations <b>fever; chills; headache; generalized myalgia; back, eye, and epigastric pain; mausea; vomiting; dizziness; and diarrhea.</b>		
Number of Cases <b>1</b>	Category (i.e. febrile illness, etc.) <b>febrile illness</b>	

**Section XII - Geographic Distribution**

Known (Virus detected)
Suspected (Antibody only detected)

**Section XIII - References**

1. Pinheiro, F.P., et al. 1977. Medicina (B. Aires) 37:Supl. 3, 175-181. 2. Johnson, K.M. Personal communication. 1980.
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**Remarks**

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