

Virus Name: Chaco

Abbreviation: CHOV

Status: Possible Arbovirus
SALS Level: 2
Antigenic Group: Timbo
Taxonomic status:
Other Information: None.

Select Agent:
SALS Basis: S

HEPA Filtration:

Section I - Full Virus Name and Prototype Number

Full Virus Name: Chaco
Prototype Number: BeAn 42217
Information from: Robert E. Shope
* **Date:** 2/27/1985
Address: Yale Arbovirus Research Unit, New Haven, Connecticut
*
Reviewed by editor

Section II - Original Source

Isolated by: Belem Virus Laboratory (1) **at:** Belem, Para, Brazil
Genus and species: Ameiva ameiva ameiva **Sentinel** X
Age/Stage: Adult **Sex:**

Isolated From	Isolation detail
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Signs and symptoms of illness: None observed
Arthropod engorged ~~depleted~~ **gravid**
Time held alive before inoculation:
Collection date: 5/8/1962 **Method:** Hand caught in noose
Place collected: Instituto Agronomico do Norte forest, Brazil
Latitude: 1° 28' " S **Longitude:** 48° 27' " W
Macrohabitat: Secondary growth forest
Microhabitat: Ground level
Method of storage until inoculated: Not stored
Footnotes:

Section III - Method of Isolation and Validity

Inoculation Date: 5/8/1962
Animal: nb mice **Embryonated egg:** **Tissue Culture:**
(Details in Section VI - Biologic Char.)
Route inoculated: Intracerebral **Reisolation:** Yes
Other reasons:
Homologous antibody formation by source animal (See Section II): Not tested
Test used: HI CF NT
Other:
Footnotes:

Section IV - Virus Properties

Physicochemical:

RNA: DNA: Single Strand: Double Strand:
Pieces: Infectivity: Sedimentation coefficient(s): /strong>
Percentage wt. of virion protein , lipid carbohydrate
Virion polypeptides:
Number: Details:
Non-virion polypeptides:
Number: Details:
Virion density: Sedimentation coefficient:
Nucleocapsid density Sedimentation coefficient:

Stability of infectivity (effects) pH

Lipid solvent:
(ether) After treatment titer Control titer
(chloroform) After treatment titer Control titer
Detergent:
(deoxycholate) 1:1000 After treatment titer <1.6 dex Control titer 4.4 dex
Other (formalin, radiation):

Virion morphology:

Shape Bullet-shaped particles (3) Dimensions
Mean (nm) range (nm) how measured Electron microscopy (3)
Surface projections, envelope
Nucleocapsid dimensions, symmetry

Morphogenesis:

Site of constituent formation in cell
Site of virion assembly
Inclusion bodies
Other

Hemagglutination:

Hemagglutination No Antigen source SMB ext. by sucrose-acetone
Erythrocytes Goose pH range pH optimum
Temperature optimum range
Remarks
Serologic methods recommended CF, NT
Footnotes:

Section V - Antigenic Relationship And Lack of Relationship To Other Viruses

Chaco antigen did not react in CF testing with: Mucambo, EEE, Mayaro, Una, Aura, Pixuna, YF, Ilheus, Bussuquara, SLE, Oriboca, Murutucu, Apeu, Caraparu, Marituba, Itaqui, Nepuyo, Catu, Guama, Moju, Capim, Guajara, Bushbush, Mirim, Maguari, Kairi, Guaroa, Tucunduba, Taiassui, Sororoa, Melao, Oropouche, Icoaraci, Tacaiuma, Turlock, Cocal, Lukuni, Candiru, Piry, Pacui, Acara, Irituia, Juroa, Anhangá, Naples, Chagres, Germiston, Bunyamwera, Batai, Ilesha, California, trivittatus, Tahyna, Lumbo, Sathuperi, Akabane, Ingwavuma, Navarro, Manzanilla, EHD-NJ, Trinita, Ieri, Aruac, Tacaribe, Hart Park, Colorado tick fever, Anopheles A and B, Panama J55, B535, Cas Cas, Hughes, Tete, Nyamanini, Witwatersrand, Quarantil, Sicilian, Bwamba, Wad Medani, Mossuril, Wongal, Mapputta, Bakau, Ketapang, Nodamura, Tsuruse, Ganjam, Lebombo, K-622, Chenuda, VSNJ, Simbu, Wanowrie, Palyam.

Chaco serum (hyperimmune, 16) did not react in CF testing with: Juroa, Marco, Anhangá.

Chaco serum did not inhibit hemagglutination of: EEE, Mucambo, Aura, Una, Mayaro, Pixuna, YF, Ilheus, Bussuquara, SLE, Oriboca, Murutucu, Caraparu, Guama, Maguari, Guaroa, Icoaraci, Tacaiuma, Turlock, Candiru, Anhangá.

CF relationship demonstrated with Timbo as follows:

Antigen	Serum	
	Timbo	Chaco
Timbo	64/64 *	16/16
Chaco	8/>64	64/> 64
Normal brain	0/0	0/0

* Serum over antigen

The recently registered Sena Madureira virus was shown to be related to Chaco and Timbo viruses by CF; thus the Timbo serogroup now consists of three members (see Sena Madureira registration card).

Section VI - Biologic Characteristics

Virus source (all VERTEBRATE isolates): Heart and liver pool (LV)
Lab Methods of Virus Recovery (ALL ISOLATIONS): Newborn mice
Susceptibility of Cell Culture Systems:

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)	SMB 4		No CPE (2)					
BHK-21 (CL)		5-6	+ CPE*	4.8**				+ (4)
E6 (CL)		6	CPE	5.0 (4)				
C6/36 (CL)		6	No CPE	5.0				+ (4)
Vero (CL)					8	Plaques (4)		

* Production of CPE or lack of, determined at 25C.
 ** Expressed in dex

Section VII - Natural Host Range

Vertebrate (species and organ) and arthropod	No. isolations/No. tested	No. with antibody/No. tested Test used	Country and region used
Ameiva ameiva ameiva	3/1,526		Para, Brazil
Kentropyx calcaratus	1/4	0/40 CF	
Other reptiles	0/4,396		
Birds	0/6,000		
Amphibians	0/42		
Man	0/2,950		
Rodents	0/11,043		
Marsupials	0/1,950		
Monkeys	0/87		
Bats	0/878		
Edentates	0/127		
Carnivores	0/32		
Horses and cattle	0/185		
Arthropods	0/20,758 pools		Amazon region, Brazil
Sentinel mice	0/16,315		

Section VIII - Susceptibility To Experimental Infection (Record Viremia)

Experimental host and age	Passage history and strain	Inoculation Route- Dose	Evidence of infection	AST (days)	Titer log10/ml
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Mice (nb)	P-2	ic 0.02	Death	7.0	6.1
Mice (nb)	P-5	ip 0.02	2/6 dead		
Mice (nb)		sc			
Mice (wn)		ic 0.03	Antibody		
Mice (wn)		ip 0.03	None		

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

Section X - Histopathology

Character of lesions: SM: encephalitis only (L.B. Dias)

Inclusion bodies:

Cytoplasmic:(M) (LV) **Intranuclear:** (M) (LV)

Organs-tissues affected:

Category of tropism:

Section XI - Human Disease

Human disease: **In nature:** (S) (R)

Death: (S) (R)

Residua: (S) (R)

Laboratory infections: Subclinical: (S) (R)

Overt Disease: (S) (R)

Clinical manifestations:

Category: **No. of cases:**

Section XII - Geographic Distribution

Known (virus):

Brazil

Section XIII - References

1. Causey, O.R., et al. 1966. Am. J. Trop. Med. Hyg. 15:239-243.
2. Buckley, S.M. 1964. Proc. Soc. Exp. Biol. Med. 116:354-358.
3. Murphy, F.A. Personal communication.
4. Kerschner, J. Personal communication. 1983.

Section XIV - Remarks
