

Virus Name: Okola		Abbreviation: OKOV
Status Possible Arbovirus	Select Agent No	SALS Level 2
SALS Basis Results of SALS surveys and information from the Catalogue.		
Other Information		
Antigenic Group Ungrouped		

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation YM 50/64	Accession Number	Original Date Submitted 11/5/1984
Family Not listed	Genus Not listed	
Information From Dr. H. Brotttes	Address Institut Pasteur, B.P. 490, Abidjan, Cote de'Ivoire	
Information Footnote Reviewed by editor		

Section II - Original Source

Isolated By (name) H. Brotttes, A. Rickenbach	Isolated at Institute Institut Pasteur Yaounde	
Host Genus Eretmapodites chrysogaster	Species	Host Age/Stage Adult (Imago)
Sex Female		
<u>Isolated From</u>	<u>Isolation Details</u>	
Signs and Symptoms of Illness	Arthropod	
Time Held Alive before Inoculation		
Collection Method Netted	Collection Date 5/21/1964	
Place Collected (Minimum of City, State, Country) Okola, 40 km from Yaounde, Cameroun		
Latitude 4° 0' N	Longitude 11° 30' E	
Macrohabitat Plateau 600 meters above sea level; tropical rain, semideciduous	Microhabitat Ground level; outdoors	Method of Storage until Inoculated -65dC Revco
Footnotes		

Section III - Method of Isolation

Inoculation Date
6/2/1964

Animal (Details will be in Section 6)
nb mice

Route Inoculated ic and ip	Reisolation Yes
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Other Reasons
First isolation of the strain in the laboratory

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) 1:2	After Treatment Titer <5.0 dex	Control Titer 8.0 dex
Lipid Solvent (chloroform)	After Treatment Titer	Control Titer
Lipid Solvent (deoxycholate) 1:1000	After Treatment Titer 3.0 dex	Control Titer 8.0 dex
Other (formalin, radiation)		

Virion Morphology

Shape Bunyavirus-like (6)	Dimensions 78-108 nm	
Mean nm	Range nm	
Measurement Method	Surface Projections/Envelope envelope observed	Nucleocapsid Dimensions, Symmetry

Morphogenesis

Site of Constituent Formation in Cell Site of Virion Assembly Site of Virion Accumulation

Inclusion Bodies Other

Hemagglutination

Hemagglutination Antigen Source Erythrocytes (species used)
Yes **SMB ext. by fluorocarbon and sucrose-
acetone** **Goose**

pH Range pH Optimum
5.8-7.0 **6.2**

Temperature Range Temperature Optimum
4dC to 37dC **20dC**

Remarks
Titre = 640 at 6.2

Serologic Methods Recommended
CF and NT

Footnotes
Titre = 640 at 6.2

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

HI test against mouse sera of following viruses gives negative results:

chikungunya, o'nyong nyong, Middleburg, Ndumu, Semliki Forest virus, Sindbis, Ntaya, Wesselsbron, Usutu, yellow fever, Uganda S, Dakar bat, West Nile, Zika, Spondweni, Entebbe bat, dengue 1. Bunyamwera, Ilesha, Shokwe.

Bwamba, Pongola.

Simbu, Ingwavuma.

Lumbo, Chenuda, Mossuril, Nyamanini, Lagos bat, Nyando, Olifantsvlei, African horse sickness, Tataguine, Nairobi sheep disease, Thogoto, Witwatersrand.

In NT tests, negative reactions were found to the following sera against 63 LD50 of YM 50/64.

Group A:		Group Bunyamwera:	
Chikungunya	(>2.2)	Bunyamwera	
O'nyong nyong	(2.3)	Ilesha	(>2)
Middelburg	(1.9)	Germiston	(>3.9)
Ndumu			
Semliki	(>2.5)	Group Bwamba:	
Sindbis	(>5.5)	Bwamba	(>2.5)
Group B:		Pongola	(>2.5)

Group B:		Pongola	(> 2.5)
Ntaya	(2.7)		
Wesselsbron	(>2.3)		
Usutu		Simbu	(>2)
Yellow fever	(>3.2)		
Uganda S	(>2.8)		
Dakar bat	(2.3)	Chenuda	(>2.1)
West Nile	(3.2)	Lumbo	(>3)
Zika	(>2.4)	Mossuril	(>1.5)
Spondweni	(>3.9)	Nyamanini	(2)
Entebbe bat		Nyando	(2.5)
		Lagos bat	

(): Homologous neutralization by reference sera; shown as LNI expressed in dex; blank = not determined

CF test (EAVRI, Entebbe): Homologous titre = 160/80

In screening tests, YM 50 antigen gave negative results with following hyperimmune fluids from mice:

Bunyamwera, Germiston, Ilesha, Shokwe

Bwamba, Pongola, Simbu, Ingwavuma.

Quaranfil, Chenuda, Nyando, Eretmapodites 147, African horse sickness, Tataguine, Lagos bat, Lebombo, Lumbo, Matruh, Mossuril, Nairobi sheep disease, Nyamaninni, Olifantsvlei, Tanga, Thogoto, Witwatersrand, Congo, AMP 5438, AR 1169, AR 1225, AR 1275, Arumowot, Acado.

Okola virus is related to Tanga virus by IFA. Only Okola virus reacted by IFA with antibodies to Anhembi, Birao, Cache Valley, Northway, Tensaw, Tlacotalpan and Santa Rosa viruses. Antibody to Tanga and Okola viruses did not react by IFA with antigens of these viruses [6].

Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)

Lab Methods of Virus Recovery (ALL ISOLATIONS)
Newborn mice

Cell system (a)	Virus passage history (b)	Evidence of Infection							Growth Without CPE +/- (g)
		CPE			PLAQUES				
		Day (c)	Extent (d)	Titer TC50/ml (e)	Day (c)	Size (f)	Titer PFU/ml (e)		
KB (CL)			No CPE						
Chick embryo (PC)			No CPE						
Monkey kidney (PC)			No CPE						

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	0/881	137/3,270 HI	Yaounde, Cameroun
Eretmapodites chrysogaster	1/5,614		
Other mosquitoes	0/52,438		
Bats	0/107		
Birds		6/25 HI	
Other vertebrates		0/40 HI	

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 log ₁₀ /ml
Mice (nb)	P 10	ic 0.02	Death	3	8.0
Mice (nb)		ip			
Mice (nb)		sc			
Mice (wn)	P 7	ic 0.03	Death		
Mice (wn)		ip 0.1	None		

Section IX - Experimental Arthropod Infection and Transmission

Arthropod species & virus source(a)	Method of Infection log ₁₀ /ml (b)		Incubation period (c)		Transmission by bite (d)		Assay of arthropod, log ₁₀ /ml (e)		
	Feeding	Injected	Days	°C	Host	Ratio	Whole	Organ	System

Section X - Histopathology

Character of lesions (specify host)
Suckling mice, ic: meningo-encephalitis with important neuronal acrosis, especially in Ammon's hornes and round cell diffuse infiltration

Inclusion Bodies Intranuclear

Organs/Tissues Affected
Brain (LV)

Category of tropism
Neurotropic

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) Near Yaounde, Cameroun
Suspected (Antibody only detected)

Section XIII - References

<ol style="list-style-type: none">1. Rapports sur le fonctionnement technique de l'Institut Pasteur du Cameroun. Annees 1964-1965-1966-1967.2. Brottes, H., et al. 1966. Bull. World Health Organ. 35:811-825.3. Salaun, J.J. and Brottes, H. 1967. Bull. World Health Organ. 37:343-361.4. Brottes, H., et al. 1969. Ann. Inst. Pasteur 116:543-551.5. Salaun, J.J., et al. 1969. Bull. World Health Organ. 41:233-241.6. Zeller, H. et al. 1989. II. Arch. Virol. Submitted.

Remarks

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