Virus Name: Kaikalur	Abbreviation: KAIV

Status
Possible Arbovirus

Select Agent
No

SALS Level
2

SALS Basis
Results of SALS surveys and information from the Catalogue.

Other Information

Antigenic Group
Simbu

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation
VRC 713423-2

Accession Number

Original Date Submitted
9/26/1984

Family
Bunyaviridae

Genus
Bunyavirus

Information From
F.M. Rodrigues

Address
Virus Research Centre, Poona, India

Information Footnote
Reviewed by editor

Section II - Original Source

Isolated By (name)
Virus Research Centre

Isolated at Institute
Poona, India

Host Genus
Culex tritaeniorhynchus (1)

Species

Host Age/Stage
100 adults

Sex
Female

Isolated From

Isolation Details

Signs and Symptoms of Illness

Arthropod
Engorged, Gravid

Time Held Alive before Inoculation
72 hours

Collection Method
Mouth suction tube

Collection Date
7/17/1971

Place Collected (Minimum of City, State, Country)
Kaikalur town, Krishna Dist., Andhra Pradesh, India

Latitude
16° 35' N

Longitude
81° 14' E

Macrohabitat
Indoor cattle shed, with thatched roof

Microhabitat
Walls, corners, and hay in cattle shed

Method of Storage until Inoculated
At +4dC on wet ice for 4 days

Footnotes

Section III - Method of Isolation

Inoculation Date
7/24/1971

Animal (Details will be in Section 6)
nb mice

Route Inoculated
Intracerebral

Reisolation
No

Other Reasons
First virus of this type 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)
Labile at pH 4.0

Lipid Solvent (ether - % used to test)	After Treatment Titer	Control Titer
Lipid Solvent (chloroform) **1:20**	After Treatment Titer **<2.3 dex**	Control Titer **5.8 dex**
Lipid Solvent (deoxycholate) **1:200**	After Treatment Titer **<2.0 dex**	Control Titer **>8.0 dex**

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

Hemaggiutination	Antigen Source	Erythrocytes (species used)
Yes	**20% SMB in borate saline, pH 9.0; protamine treated.**	**Goose**
pH Range **6.0-6.2**	pH Optimum	
Temperature Range **27dC**	Temperature Optimum	

Remarks
HA was not obtained with sucrose-acetone extracted mouse brain antigen tested at pH 6.0-7.0

Serologic Methods Recommended
CF, NT

Footnotes
HA was not obtained with sucrose-acetone extracted mouse brain antigen tested at pH 6.0-7.0

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

Studies at the Virus Research Centre, Poona [1] :

No relationship was detected by the CF test with immune sera to the following viruses: Alphaviruses; CHIK, SIN. Flaviviruses; JE, WN, DEN, types 1, 2, 3, and 4, KFD, MVE, NTA, and LGT. Bunyaviruses; UMB, BAT, and KSO. Orbiviruses; AHS, type 2, and PAL. Rhabdovirus; CHP. Herpesvirus; herpes simplex. Reovirus; reovirus type 3. Orthomyxoviridae; DHO. Unclassified: VKT, Ichampadi, ARK, and MIN. In preliminary CF tests, relationship was established between VRC 713423-2 and Sathuperi virus. The results of neutralization tests in infant mice with 713423-2, Sathuperi and Ingwavuma viruses and the respective homologous and heterologous immune sera were as follows:

Immune sera	Virus					
	713423-2		Sathuperi		Ingwavuma	
	Titre	LNI [a]	Titre	LNI	Titre	LNI
713423-2	<2.0	> 4.5	> 6.7	+1.0	6.5	0.2
Sathuperi	4.2	2.3	2.7	> 5.0	ND	
Normal mouse serum	6.5		> 7.7		6.7	
BAPS control titrations	6.0		> 7.6		6.6	

[a] LNI in dex.

Studies at Yale University School of Medicine:

Neutralization tests in Vero cells were conducted with 713423-2 virus and mouse immune ascitic fluid (MIAF) to the following viruses belonging to the Simbu group: AKA, BUT, ING, MAN, MER, ORO, SABO, SAN, SHA, SHU, SIM, THI, Utinga, and Yaba 7. 713423-2 was neutralized only by MIAF to Shuni virus. The relationship between 713423-2 and Shuni and Sathuperi viruses is shown by the following results of neutralization tests in Vero cells:

MIAF	Virus								
	713423-2			Shuni			Sathuperi		
	Virus dose (dex)	Titre [b]	LNI [c]	Virus dose (dex)	Titre	LNI	Virus dose (dex)	Titre	LNI
713423-2	1.8	320	>4.35	1.5	240	>4.0	2.3	60	2.5
Shuni	1.5	210	3.0	2.0	>1280	>4.0	1.7	90	3.7
Sathuperi	1.8	80	2.85	2.0	70	3.0	2.0	>1280	>4.3

[b] Serum dilution neutralization endpoints vs. 100 TCD50.

[c] Constant serum-varying virus dilution neutralization indices in dex.

713423-2 is closely related to Shuni virus but the sixfold or higher difference in titres of Shuni MIAF when tested with Shuni and 713423-2 viruses, respectively, indicate that they are not identical.

Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)
Blood (M), urine (M)(LV), nasopharyngeal (M); pleural, peritoneal, pericardial exudates in man (M)

Lab Methods of Virus Recovery (ALL ISOLATIONS)
Newborn mice

Cell system (a)	Virus passage history (b)	Evidence of Infection							
		CPE			PLAQUES			Growth Without CPE	
		Day (c)	Extent (d)	Titer TCD50/ml (e)	Day (c)	Size (f)	Titer PFU/ml (e)	+/- (g)	
Vero (CL)	SM 3	5	CPE Pos.	8.15 (d)					

(d) Expressed in dex

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
Culex tritaeniorhynchus	1/470 pools (39,294)		Andhra Pradesh State, India (1)

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)	SM 3	ic 0.02	Sickness and death		
Mice (nb)		ip 0.03	Sickness and death		
Mice (nb)		sc			
Mice (wn)		ic 0.03	Sickness and death		
Mice (wn)		ip			
mice (nb)	SM 7	ic	Sickness and death	1.2-1.6	9.0

Section IX - Experimental Arthropod Infection and Transmission

Arthropod species & virus source(a)	Method of Infection log10/ml (b)		Incubation period (c)		Transmision by bite (d)		Assay of arthropod, log10/ml (e)		
	Feeding	Injected	Days	°C	Host	Ratio	Whole	Organ	System

Section X - Histopathology

Character of lesions (specify host)

Inclusion Bodies — Intranuclear

Organs/Tissues Affected

Category of tropism

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)
India (1)

Suspected (Antibody only detected)

Section XIII - References

1. Rodrigues, F.M., et al. 1977. Indian J. Med. Res. 66(5):719-725.

Remarks