Virus Name: Arkonam	Abbreviation: ARKV

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
IG10658

Accession Number

Original Date Submitted
6/5/1984

Family
Not listed

Genus
Orbivirus

Information From
Director, Virus Research Centre, Poona

Address
20-A, Wellesley Road, P.O. Box 11, Poona 1, India

Information Footnote
Revised

Section II - Original Source

Isolated By (name)
D.N. Dandawate

Isolated at Institute
Vellore, India

Host Genus
Anopheles subpictus (pool of 116 mosquitoes)

Species

Host Age/Stage
Adult

Sex
Female

Isolated From

Isolation Details

Signs and Symptoms of Illness

Arthropod

Time Held Alive before Inoculation

Collection Method
Aspiration of mosquitoes resting indoors

Collection Date
1/30/1957

Place Collected (Minimum of City, State, Country)
Minnal, India

Latitude
13° 4' N

Longitude
79° 34' E

Macrohabitat

Microhabitat

Method of Storage until Inoculated
Kept alive until processed

Footnotes

Section III - Method of Isolation

Inoculation Date
1/31/1957

Animal (Details will be in Section 6)
nb mice

Route Inoculated
ic and sc

Reisolation
No

Other Reasons
This strain did not resemble any of the other viruses handled at that time.

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)
pH 3.0, 37dC 1 hr; after: 1.5 dex Control titer: 5

Lipid Solvent (ether - % used to test) **1:5**	After Treatment Titer **3.7 dex**	Control Titer **4.6 dex**
Lipid Solvent (chloroform) **1:20**	After Treatment Titer **2.9 dex**	Control Titer **5.6 dex**
Lipid Solvent (deoxycholate) **1:200**	After Treatment Titer **2.7 dex**	Control Titer **5.4 dex**

Other (formalin, radiation)

Virion Morphology

Shape **Reoviridae-like (4)**	Dimensions **58-64 nm**	
Mean **61 nm**nm	Range nm	
Measurement Method **EM (4)**	Surface Projections/Envelope **No 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)
No	**No SMB ext. by sucrose-acetone**	**Goose5.7-7.6**
pH Range	pH Optimum	
Temperature Range **27dC**	Temperature Optimum	

Remarks

Serologic Methods Recommended
CF, NT

Footnotes

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

By CF, Arkonam (IG10658) antigen did not react with (homologous titre in parenthesis) hyperimmune sera against:

Sindbis (256), chikungunya (256), Japanese encephalitis (512), West Nile (256), dengue 2 (256), Kyasanur Forest disease (256), Ganjam (256), Venkatapuran (128), Umbre (>64), Sathuperi (16), Minnal (32), Palyam (128), Kasba (256), Kaisodi (64), Wanowrie (128), Wad Medani (256), Bhanja (256), Batai (256), EMC (32), and Balagodu (128).
CF tests carried out by Dr. R.E. Shope at YARU indicated that IG10658 antigen did not react with polyvalent grouping ascitic fluids of the following groups:
Group A, B, C, California , Phlebotomus fever, Bunyamwera , Quaranfil, Kaisodi, Qalyub , Guama, Vesicular stomatitis , Anopheles A, Anopheles B, Turlock Capim, Tacaribe -LCM, Simbu and Hart Park .
IG10658 hyperimmune serum also failed to react with the following antigens in CF:

Belmont, D'Aguilar , Acara, Akabane , Amapari , Anhanga, Anopheles A, Anopheles B, Apeu , Aruac, Botambi, Bahig, Bakau, Bandia , Batai , Benfica, Agua Preta, Urucuri, Belem, Bertioga, Boracea, Bujaru, Bunyamwera , Bushbush, Buttonwillow , Bwamba, California , ConnAn 114, Candiru, Capim, Caraparu , Charleville , Chaco, Chagres, Chandipura , Changuinola, Chenuda, CoAr 3627, Congo, Cotia , Colorado tick fever, Dugbe , EgAn 890-3, EgAn 1398-61, EHD-NJ, Embu, Eretmapodites 147, EgAn 1825-61, Eubenangee , Farallon , Hart Park , Germiston , Grand Arbaud, Guajara, Guama, Guaroa , Hughes , Icoaraci, Ieri, Ilesha , Ingwavuma , Itaporanga, Ar61-2629, Kannamangalam, Sembalam,IPD A/401, Oyo, Gabek Forest (IbAn 10065), IbAn 28946, IbAn 15736, IbAn 17143, Mokola , Jos, kotonkan , Orungo, Pacora, La Joya, Johnston Atoll, Junin , Jurona, Kairi , Kamese, Karimabad, Kemerovo, Kern Canyon, Ketapang, Koongol, Kwatta, Lagos bat , Lanjan, Lahore, Lebombo, Lone Star, Lukuni, Manawa , Mapputa, Marco, Melao , Minatitlan, Mirim, Mossuril, Almpiwar , Mt.Elgon bat, Murutucu , Naples, Navarro, Nepuyo , Nkolbisson, Nyamanini, Nyando, Olifantsvlei, Oropouche , Pacui, Patois, Pichinde , Piry , Punta Toro , Qalyub , Quaranfil, Salehabad, Sawgrass, SH 763, Sicilian, Silverwater, Simbu , Soldado, Sororoco, Tacaiuma, Tacaribe , Tamiami , Tataguine, Tembe, Tete, Thogoto , Timbo, Tribec, Triniti, trivittatus , Turlock, Upolu, Utinga, Uukuniemi , VS- Indiana , VSNJ , Witwatersrand, Wongal, Wyeomyia , Yaba-1 , Herpes simplex , LCM , NDV , rabies , Ectromelia and reovirus 3 .
Arkonam virus is related by IFA and CF with Ieri and Gomoka viruses and weakly cross-reacts with Great Island and Lipovnik viruses. Arkonam, Gomoka and Ieri viruses now form the Ieri antigenic group (4).

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						
		CPE			PLAQUES			Growth Without CPE
		Day (c)	Extent (d)	Titer TCD50/ml (e)	Day (c)	Size (f)	Titer PFU/ml (e)	+/- (g)
Rat embryo(PC)	IG10658 SM 39-43		No CPE					-(3)
BHK-21 (CL)			No CPE					- (3)
Vero (CL)			No CPE					- (3)
Aedes albopictus (CL)			No CPE					+ (3)

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. tsted Test used	Country and region
Anopheles subpictus	1/425 (63,842mosq.)		North Arcot District, Tamil Nadu and Chittoor District, Andhra Pradesh, India
Anopheles hyrcanus	1		North Arcot District, Tamil Nadu, India
Culex tritaeniorhynchus	1		
Man		4/35 NT	South India (3)

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 39	ic 0.02	Sickness and death	2-6	7.0
Mice (nb)		ip 0.03	None		
Mice (nb)		sc			
Mice (wn)		ic 0.03			
Mice (wn)		ip 0.2			
embryonated eggs (7 day)		ys 0.1	Irregular deaths		
guinea pigs	IG10658 SM 39-43	ip	No evidence of infection; CF and NT antibodies not detected (3).		

Section IX - Experimental Arthropod Infection and Transmission

Virus multiplies in experimentally infected Aedes albopictus mosquitoes. (2)

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

Suspected (Antibody only detected)

Remarks

1. Dandawate, C.N., et al. 1969. Ind. J. Med. Res. 57:1420-1426. 2. Virus Research Centre, Poona, India. 1971. Unpublished data. 3. Dandawate, C.N. and Shope, R.E. 1975. Ind. J. Med. Res. 63:1180-1187. 4. Zeller, H. et al. 1989. Ill. Arch. Virol. Submitted.