Virus Name: Dera Ghazi Khan	Abbreviation: DGKV

Status
Possible Arbovirus

Select Agent
No

SALS Level
2

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

Other Information

Antigenic Group
2

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation
JD 254

Accession Number

Original Date Submitted
10/24/1984

Family
Bunyaviridae

Genus
Nairovirus

Information From
F. Begum and C.L. Wisseman, Jr.

Address
Dept. of Microbiology, University of Maryland, 660 W. Redwood St., Baltimore MD 21201

Information Footnote
Reviewed by editor

Section II - Original Source

Isolated By (name)
Fatima Begum (1)

Isolated at Institute
Lahore, Pakistan

Host Genus
Hyalomma dromedarii

Species

Host Age/Stage
Larval ticks

Sex
Not Answered

Isolated From

Isolation Details

Signs and Symptoms of Illness

Arthropod

Time Held Alive before Inoculation
8 days

Collection Method
Ticks collected from camel

Collection Date
4/4/1966

Place Collected (Minimum of City, State, Country)
Sakhi Sarwar, D.G. Khan District, Pakistan

Latitude
29° 58' N

Longitude
70° 20' E

Macrohabitat
Plains

Microhabitat
Semi-desert except where irrigated. Acacia shrubs and bush vegetation.

Method of Storage until Inoculated
Ticks reared in the laboratory before inoculation.

Footnotes

Section III - Method of Isolation

Inoculation Date
4/12/1966

Animal (Details will be in Section 6)
nb mice

Route Inoculated
Intracerebral

Reisolation
No

Other Reasons

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)	After Treatment Titer **2.1 dex**	Control Titer **5.1 dex**
Lipid Solvent (chloroform)	After Treatment Titer	Control Titer
Lipid Solvent (deoxycholate) **1:100**	After Treatment Titer **2.3 dex**	Control Titer **6.7 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)
No	**SMB and livers ext. by sucrose-acetone or borate saline**	**Goose**
pH Range **5.8-7.0**	pH Optimum	
Temperature Range **RT**	Temperature Optimum	

Remarks
Several attempts at producing a hemagglutinin have failed.

Serologic Methods Recommended
CF, NT

Footnotes
Several attempts at producing a hemagglutinin have failed.

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

Most of the screening tests were done with materials supplied by YARU. Hyperimmune mouse serum to this virus failed to react with the following antigens:

HI Test		**CF Test**	
Group A			
Aura	Caraparu	Lanjan	Ichampadi
Chikungunya	Marituba	Matucare	Palyam
EEE	Anopheles A	Nyamanini	Minnal
Getah	Guaroa	Manawa	Jurona
Mayaro	Wyeomyia	Tehran	Kern Canyon
Semliki Forest	Bwamba	Quaranfil	Epizootic hem. dis. (NJ)
Sindbis	California	RudSM 214 (WM)	
Middelburg	Capim	Silverwater	Koongol
	Changuinola	Soldado	Lagos bat
Group B	Guama	Thogoto	Klamath

	Karimabad	Tribec	M 1146
Dengue 1,2,3,4	Sathuperi	Wad Medani	Mapputa
Bussuquara	Manzanilla	Johnston Atoll	Marco
Ilheus	Tacaribe	Bakau	Mirim
Japanese B encephalitis	Eretmapodites	Hepato-encephalitis	Mossuril
West Nile	Witwatersrand	Hughes	Pacui
Yellow fever	Farallon	Simbu	Piry
Zika	Chenuda	Chaco	SAAr 4511
Langat	Colorado tick fever	Turlock	Lebombo
Powassan		Umbre	Semunya (Congo)
Murray Valley encephalitis	Dugbe	VSV	Tacaiuma
	IbH 25		
	Ganjam	Acara	Hazara
Others	Bhanja	Anopheles B	Tembe
	Wanowrie	Aruac	Nariva
Apeu	Uukuniemi	Navarro	Triniti
Caraparu	Kaisodi	Corriparta	Normal mouse brain
Oriboca	Kemerovo	Hart Park	
Murutucu		Ieri	
Bunyamwera		Venkatapuram	
Sicilian SF			

Serologically related to Abu Hammad, Kao Shuan, Pathum Thani, and Pretoria viruses. Members of the DGK serogroup share intergroup relationships with viruses of the CHF-CON, HUG, NSD, QYB and SAK serogroups [3] .

Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)

Lab Methods of Virus Recovery (ALL ISOLATIONS)
Newborn and weanling 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)	
BHK-21 (CL)		15	No CPE		15	No plaques			

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
Hyalomma dromedarii	1/9 pools		Dera Ghazi Khan District, Pakistan
Rhipicephalus sp.	0/4 pools		
Man		0/140 CF	Hazara District, Karachi, Lahore, and Dacca, Pakistan

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)	SMB 10	ic 0.01	Paralysis, death	6-10	8.3
Mice (nb)		ip 0.03	Sporadic deaths only		
Mice (nb)		sc			
Mice (wn)		ic	None		
Mice (wn)		ip			
guinea pigs (ad)		ip 0.5	None		
hamsters (ad)		ip 0.5	None		
hamsters (2-day)		ic 0.03	None		

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)
Pakistan

Suspected (Antibody only detected)

Section XIII - References

1. Begum, F., et al. 1970. Am. J. Epidem. 92:180-191.
2. Begum, F., et al. 1970. Am. J. Epidem. 92:195-196.
3. Casals, J. and Tignor, G.H. 1980. Intervirology 14:144-147.
4. Mathews, R.E.F. 1982. Intervirology 17:115-118.

Remarks

Dera Ghazi Khan virus, plus the other viruses of the DGK serogroup, have been classified as members of the Nairovirus genus in the family Bunyaviridae (4).