

Virus Name: Minnal		Abbreviation: MINV
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 IG 7481	Accession Number	Original Date Submitted 6/6/1984
Family Not listed	Genus Not listed	
Information From Virus Research Centre, Poona	Address 20A Wellesley Road, P.O. Box No. 11, Poona 1, India	
Information Footnote Revised		

Section II - Original Source

Isolated By (name) VRC (1)	Isolated at Institute Vellore, South India	
Host Genus Culex "vishnui"	Species	Host Age/Stage Adult
Sex Female		
<u>Isolated From</u>	<u>Isolation Details</u>	
Signs and Symptoms of Illness	Arthropod	
Time Held Alive before Inoculation		
Collection Method Indoor, resting	Collection Date 9/25/1956	
Place Collected (Minimum of City, State, Country) Minnal, N. Arcot District, Madras State, India		
Latitude 13° 4' N	Longitude 79° 34' E	
Macrohabitat Cattle shed	Microhabitat	Method of Storage until Inoculated Kept alive until processed
Footnotes		

Section III - Method of Isolation

Inoculation Date
9/26/1956

Animal (Details will be in Section 6)
nb mice

Route Inoculated Intracerebral	Reisolation No
--	--------------------------

Other Reasons
This strain does not resemble any of the other viruses handled at VRC at the 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 titer: 1.8 dex Control titer: 6.5 dex

Lipid Solvent (ether - % used to test) 1:5	After Treatment Titer 6.2 dex	Control Titer 6.3 dex
--	---	---------------------------------

Lipid Solvent (chloroform)	After Treatment Titer 4.8 dex	Control Titer 6.8 dex
----------------------------	---	---------------------------------

Lipid Solvent (deoxycholate) 1:1000	After Treatment Titer <1.5 dex	Control Titer 4.7 dex
---	---	---------------------------------

Other (formalin, radiation)
Heat, 56C 1 hr: <1.0 dex; control: 6.5 dex

Virion Morphology

Shape Reoviridae-like (4)	Dimensions 62-64 nm
-------------------------------------	-------------------------------

Mean 63 nmnm	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

Hemagglutination No	Antigen Source SMB ext. by sucrose-acetone; acetone-ether	Erythrocytes (species used) Goose*
-------------------------------	---	--

pH Range 6.0-7.6	pH Optimum
----------------------------	------------

Temperature Range 4dC, 27dC, 37dC	Temperature Optimum
---	---------------------

Remarks

* Tests for HA activity also tried with RBC's of sheep, calf, horse and 1 day-old chicks.

Serologic Methods Recommended

CF, NT

Footnotes

* Tests for HA activity also tried with RBC's of sheep, calf, horse and 1 day-old chicks.

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

By CF, Minnal virus antigen did not react with (homologous titer in parenthesis) grouping sera of groups A, B, C, Guama, Capim, California, Simbu, Bakau, Bunyamwera; and sera of Oropouche (256), Tacaiuma (128), Anopheles B (64), Ganjam (32), Irituia (64), Acara (64), Pacui (64), Candiru (64), Piry (>128), Palyam (32), Mossuril (32), Tete (64), Witwatersrand (32), Navarro (64), Wongal (32), Lebombo (64), Mapputa (64), Wad Medani (32), Sicilian (>128), Hart Park (8), EHD-NJ (64), Nyamanini (>128), Wanowrie (16), Congo-related (UG SE65) (128), VSNJ (32), VSIndiana (32), Bwamba (UG SE493) (64), Tacaribe (16), Anopheles A (32), Lukuni (>128), Jurona (32), Nyando (32), Quarafil (32), Chenuda (32) [2].
Minnal virus related by IFA and CF to Umatilla, Llano Seco and Netivot viruses (Umatilla antigenic group) [7].

Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)
Blood (M)(LV)

Lab Methods of Virus Recovery (ALL ISOLATIONS)
Newborn mice

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)	
Macaca radiata monkey kidney (PC)			No CPE					-
Rat embryo (PC)			No CPE					-
BS-C-1 (CL)			No CPE					-
Vero (CL)			No CPE					-
Vero (CL)	P-35				14	1 mm	4.1** (3)	
LLC-MK2 (CL)						No plaques (3)		
Aedes albopictus (CL)			CPE					

** 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 vishnui	1		Minnal, Tamil Nadu, India
Man		3/86 NT	India (5)

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-30	ic 0.02	Death	2.7	>8.7
Mice (nb)		ip 0.03	Death	6.2	3.3
Mice (nb)		sc			
Mice (wn)		ic 0.03	None		
Mice (wn)		ip 0.2	None		
Chick embryos		ys 0.1	Death		

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

Propagates in *Aedes albopictus* mosquitoes by intrathoracic inoculation (4).

--	--	--	--	--	--	--	--	--	--

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, Australia

Suspected (Antibody only detected)

Section XIII - References

1. Dandawate, C.N., et al. 1969. Ind. J. Med. Res. 57:1420-1426.
2. Director, YARU. Personal communication. 1971.
3. Stim, T.B. 1969. J. Gen. Virol. 5:329-338.
4. Virus Res Centre, Poona, India. 1971. Unpublished results.
5. Dandawate, C.N. and Shope, R.E. 1975. Ind. J. Med. Res. 63:1180-1187.
6. Marshall, I.D. Personal communication.
7. Zeller, H. et al. 1989. III. Arch. Virol. Submitted.

Remarks

A virus strain isolated in Australia has been found to be identical to Minnal virus (6).