

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

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation CSIRO 82 (1)	Accession Number	Original Date Submitted 3/31/1985
Family Orbivirus	Genus	
Information From H.A. Standfast	Address CSIRO LPL, Private Bag 3, Indooroopilly, Queensland 4068, Australia	
Information Footnote Reviewed by editor		

Section II - Original Source

Isolated By (name) H.A. Standfast and A.L. Dyce	Isolated at Institute CSIRO LPL	
Host Genus Pool of Culicoides schultzei and C. perigrinus	Species	Host Age/Stage
Sex Female		
<u>Isolated From</u>	<u>Isolation Details</u>	
Signs and Symptoms of Illness	Arthropod Depleted	
Time Held Alive before Inoculation none		
Collection Method truck trap	Collection Date 10/1/1975	
Place Collected (Minimum of City, State, Country) Beatrice Hill, Northern Territory		
Latitude 12° 39' S	Longitude 131° 20' E	
Macrohabitat subcoastal plain	Microhabitat	Method of Storage until Inoculated liquid nitrogen vapour
Footnotes		

Section III - Method of Isolation

Inoculation Date
6/23/1976

Animal (Details will be in Section 6)
nb mice

Route Inoculated intracerebral	Reisolation Yes
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Other Reasons
eight other isolations from bovine blood

Homologous Antibody Formation by Source Animal

Test(s) Used

Footnotes

Section IV - Virus Properties

Physicochemical
RNA, Double Strand

Pieces (number of genome segments) 10	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) 10%, RT	After Treatment Titer 3.5 dex	Control Titer 4.0 dex
Lipid Solvent (chloroform) 10%, RT	After Treatment Titer 2.5 dex	Control Titer 4.0 dex
Lipid Solvent (deoxycholate)	After Treatment Titer	Control Titer
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

Hemagglutination Antigen Source Erythrocytes (species used)

Not tried

pH Range pH Optimum

Temperature Range Temperature Optimum

Remarks

Serologic Methods Recommended
NT, CF, IFA

Footnotes

Section V - Antigenic Relationship and Lack of Relationship to Other Viruses**Results of complement fixation tests with Palyam serogroup viruses [2]**

ANTIGEN	ANTISERUM										
	PALYAM	CSIRO VILLAGE	MARRAKAI	BUNYIP CREEK	VELLORE	B2032	KASBA	ABADINA	K58	D'AGUILAR	NYABIRA
PALYAM	128/32 *	64/32	128/64	64/32	256/128	256/32	256/64	256/32	64/16	256/64	128/64
CSIRO VILLAGE	16/16	128/8	32/4	64/32	128/64	128/8	128/4	64/8	8/4	256/16	128/8
MARRAKAI	128/64	128/64	256/64	128/64	256/128	128/64	256/64	256/128	64/32	512/64	128/>=128
BUNYIP CREEK	128/32	64/64	128/64	128/128	128/>=128	128/64	256/64	128/64	32/32	256/64	128/>=128
VELLORE	128/64	128/64	128/64	64/64	512/>=128	256/64	256/64	256/64	64/32	256/64	128/>=128
DAK AR B2032	128/64	128/64	128/128	64/128	256/>=128	256/128	256/128	256/128	64/64	256/>=128	128/>=128
KASBA	128/64	128/64	128/64	128/64	256/>=128	256/64	512/128	256/64	64/32	512/64	128/>=128
ABADINA	128/32	64/32	128/64	64/64	256/>=128	128/64	256/64	256/64	64/64	256/64	128/>=128
DAK AR K58	32/16	128/16	128/16	64/32	256/64	128/16	256/16	256/16	64/8	256/16	128/32
D'AGUILAR	128/64	64/64	128/64	128/64	128/>=128	128/64	256/64	256/64	32/32	512/>=128	128/>=64

* Reciprocal of highest antiserum dilution/reciprocal of highest antigen dilution.

Results of plaque reduction neutralization tests with Palyam serogroup viruses [2]

VIRUS	ANTISERUM										
	PALYAM	CSIRO VILLAGE	MARRAKAI	BUNYIP CREEK	VELLORE	B2032	KASBA	ABADINA	K58	D'AGUILAR	NYABIR
PALYAM	320 **	320	0	0	0	0	0	0	0	0	0
CSIRO VILLAGE	40	5120	0	0	0	0	0	0	0	0	0
MARRAKAI	0	0	>=20480	0	0	0	10	20	0	0	0
BUNYIP CREEK	0	0	0	80	640	0	0	0	0	0	0
VELLORE	0	0	0	20	10240	0	0	0	0	0	0
DAK AR C2032	0	0	0	0	10	10240	0	0	0	0	0
KASBA	0	0	40	0	0	0	>=20480	2560	320	0	0
ABADINA	0	0	0	0	0	0	1280	5120	1280	0	0
DAK AR K58	0	0	0	0	0	0	2560	2560	1280	0	0
D'AGUILAR	0	0	0	0	20	0	0	0	0	320	1280

** Reciprocal of highest antiserum dilution producing >=90% plaque inhibition in Vero cell cultures; 0 = <10

Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)
Blood (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)	
BHK-21 (CL)	BHK 4	2	4+	6.0 ^a				
Vero (CL)		2	4+	5.0				

^a 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
C. schultzei and C. perigrinus	1/1,200		Beatrice Hill, Northern Territory, Australia
Cattle (blood)	8/3,000		
Cattle		17/515 NT	Northern third of Northern Territory, Australia
Buffalo		22/26 NT	

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)	SM 4	ic	paralysis or death	4	
mice (nb)		ip			
mice (nb)		sc			
mice (wn)		ic			
mice (wn)		ip			

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)

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)
Suspected (Antibody only detected)

Section XIII - References

1. Cybinski, D.H. and St. George, T.D. 1982. Aust. J. Biol. Sci., 35:343-351. 2. Knudson, D.L. et al. 1984. Intervirology 22:41-49.
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Remarks

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