

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

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation Argas T-461	Accession Number	Original Date Submitted 10/21/1984
Family Bunyaviridae	Genus Uukuvirus	
Information From H.C. Barnett	Address University of Maryland, 29 South Greene Street, Baltimore, Maryland, USA	
Information Footnote Reviewed by editor		

Section II - Original Source

Isolated By (name) J.R. Gorham (1)	Isolated at Institute Lahore, Pakistan	
Host Genus Argas abdussalami	Species	Host Age/Stage Adults
Sex Not Answered		
<u>Isolated From</u>	<u>Isolation Details</u>	
Signs and Symptoms of Illness	Arthropod	
Time Held Alive before Inoculation		
Collection Method Caught by hand	Collection Date 8/7/1964	
Place Collected (Minimum of City, State, Country) Manawa, 13 miles east of Lahore, Pakistan		
Latitude 31° 32' N	Longitude 74° 30' E	
Macrohabitat Alluvial plain of Indus River; elev. 800 ft.; climate: hot and dry	Microhabitat Dalbergia trees where Gyps bengalensis (vultures) roost	Method of Storage until Inoculated Held alive approximately two weeks
Footnotes		

Section III - Method of Isolation

Inoculation Date
9/21/1964

Animal (Details will be in Section 6)
nb mice

Route Inoculated
Intracerebral

Reisolation
Not tried

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	Control Titer
Lipid Solvent (chloroform)	After Treatment Titer 2.6 dex	Control Titer 7.0+ dex
Lipid Solvent (deoxycholate) 1:1000	After Treatment Titer 2.9 dex	Control Titer 7.0+ 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

Hemagglutination

Antigen Source

Erythrocytes (species used)

Yes**SMB ext. by sucrose-acetone****Goose**

pH Range

pH Optimum

6.0-6.6**6.2**

Temperature Range

Temperature Optimum

Remarks

Titer = 160-320

Serologic Methods Recommended

CF, HI, NT

Footnotes

Titer = 160-320

HI Test. Immune sera tested against 8 units of Argas 461 antigen (parentheses, homologous titers):

Polyvalent A (640-2560), Polyvalent B (640-2560), Polyvalent C (160-1280), Polyvalent California group (160 and up), Bunyamwera (640), Sandfly Naples (640), Sandfly Sicilian (1280), Karimabad (2560), Tehran (640).
None inhibited agglutination at dilution 1:10.

CF Test. Argas 461 antigen tested against immune sera for the following viruses (in parentheses, homologous titers):

Polyvalent A (32-128), Polyvalent B (32-128), Caraparu (128), Oriboca (64), Anopheles A (256), Bakau group (32), Bunyamwera (128), Ilesha (64), Kairi (256), Guaroa (256), Wyeomyia (32), Bwamba group (256), Guama group (64), California group (32-128), Changuinola (128), Koongol group (64), Phlebotomus fever group (16-128), Akabane (128), Manzanilla (128), Oropouche (256), Cocal (512), Anopheles B (16), Chenuda (32), Colorado tick fever (128), Eretmapodites 147 (64), Hart Park (16), Hughes (512), Ganjam (128), Bhanja (64), Jurona (16), Kaisodi (256), Kemerovo (256), Lanjan (256), Marco (8), Mirim (128), Mossuril (32), Nyamanini (256), Quarafil (128), Semunya (8), Silverwater (256), Thogoto (128), Tacaiuma (128), Wad Medani (64), Witwatersrand (128), Chandipura (256), Johnston Atoll (512), Uukuniemi (64), Congo (64), Soldado (256); mouse poliomyelitis (256), reovirus type 3 (256), LCM (256), NDV (128), ectromelia (512).
None reacted at dilution 1:4 with the antigen.

Above report based on work done by Casals [2].

HI and CF Reactions of Manawa with Members of Uukuniemi Group [2]

Antigen	Antiserum					
	MWA	HI * UUK	GA	MWA	CF ** UUK	GA
Manwa	160	40	40	512+/512+	0	16/16+
Uukuniemi	80	640	160	0	256/128	32/16+
Grand Arbaud	20	40	160	0	16/16	256+/16+

* 8 Units of antigen in test

** Serum titer/antigen titer; 0 = <4/<4

Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)
CNS (LV)

Lab Methods of Virus Recovery (ALL ISOLATIONS)
Weanling mice

Cell system (a)	Virus passage history (b)	Evidence of Infection							Growth Without CPE +/- (g)
		CPE			PLAQUES				
		Day (c)	Extent (d)	Titer TCD50/ml (e)	Day (c)	Size (f)	Titer PFU/ml (e)		
LLC-MK2 (CL)						Plaques (5)			

Vertebrate (species and organ) and arthropod	No. isolations/No. tested	No. with antibody/No. tested Test used	Country and region
Argas abdussalami	18/19		Punjab, Pakistan
Rhipicephalus sanguineus turanicus	1		Hunza, Gilgit Agency, Pakistan(4)
Rhipicephalus sp. (larvae)	1		Lahore District, Pakistan (4)
Man		0/245 HI	Pakistan (3)
Man		0/93 HI	Bangladesh (3)
Cow and water buffalo		0/68 HI	Pakistan (3)
Sheep		0/21 HI	
Quail		0/16 HI	
Pigeon		0/20 HI	
Sparrow		0/5 HI	

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. Subcommittee on Information Exchange, ACAV. 1970. Supplement to Catalogue of Arthropod-borne Viruses of the World. Am. J. Trop. Med. and Hyg. 19:1087-1088.
2. Casals, J. Personal communication.
3. Moore, R.C. Personal communication.
4. Begum, F., et al. 1970. Am. J. Epidem. 92:197-202.
5. Stim, T.B. 1969. J. Gen. Virol. 5:329-338.

Remarks

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