

Virus Name: Trivittatus		Abbreviation: TVTV
Status Arbovirus	Select Agent No	SALS Level 2
SALS Basis Results of SALS surveys and information from the Catalogue.		
Other Information		
Antigenic Group California		

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation	Accession Number	Original Date Submitted 2/14/1985
Family Bunyaviridae	Genus Bunyavirus	
Information From Carl M. Eklund, M.D.	Address Rocky Mountain Laboratory, Hamilton, Montana	
Information Footnote Reviewed by editor		

Section II - Original Source

Isolated By (name) Carl M. Eklund	Isolated at Institute Rocky Mountain Laboratory	
Host Genus Aedes trivittatus* (pool of 96)	Species	Host Age/Stage
Sex Not Answered		
<u>Isolated From</u>	<u>Isolation Details</u>	
Signs and Symptoms of Illness	Arthropod	
Time Held Alive before Inoculation		
Collection Method Hand collection, by aspirator	Collection Date 7/16/1948	
Place Collected (Minimum of City, State, Country) Three miles south of Bismarck, North Dakota, USA		
Latitude 48° N	Longitude 100° W	
Macrohabitat Wooded area	Microhabitat	Method of Storage until Inoculated Dry ice
Footnotes		

Section III - Method of Isolation

Inoculation Date
7/20/1948

Animal (Details will be in Section 6)
nb mice

Route Inoculated
Intraperitoneal

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	Control Titer
Lipid Solvent (deoxycholate)	After Treatment Titer	Control Titer

Other (formalin, radiation)

Virion Morphology

Shape	Dimensions 98 nm	
Mean nm	Range nm	
Measurement Method	Surface Projections/Envelope Envelope observed	Nucleocapsid Dimensions, Symmetry Capsid

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

Temperature Range Temperature Optimum

Remarks

HA difficult to prepare from SMB; successfully prepared by PEG conc. of inf. BHK-21 culture fluids (19) * In 1948 Ae trivittatus and Ae sticticus were not separated but subsequent experience makes it probable that the actual sou

Serologic Methods Recommended

CF, NT, immunodiffusion

Footnotes

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

Trivittatus virus shares antigens with the other twelve registered members of the California serogroup. This group now contains two complexes including the California complex and the Guaroa complex. Trivittatus virus has been antigenically classified as a distinct virus type within the California complex [20].

References giving details of relationships are: [1], [2], [4], [5], [6], [20].

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)	
HeLa (CL)	SM 6		4+	7.5** (21)				
BHK-21 (CL)	MB unk.	2	4+	>9.3 (22)				
Vero (CL)	P-7				3	1 mm	5.0** (23)	
LLC-MK2 (CL)					10	1 mm	6.9 (23)	

** Expressed in dex

Vertebrate (species and organ) and arthropod	No. isolations/No. tested	No. with antibody/No. tested Test used	Country and region
Cotton rat (blood)	1		Florida, USA
Sentinel rabbit (blood)	Pos. isol		Iowa, USA, Wisconsin, Illinois, Ohio
Aedes trivittatus	Many		North Dakota, Iowa, Wisconsin, Illinois, Ohio, USA,
Ae infirmatus	Several		Florida, USA
Ae atlanticus	2 reported		
Ae vexans	Several		Iowa, USA
Ae taeniorhynchus	1		Florida, USA
Cx pipiens	1		Iowa, USA
Mansonia perturbans	1		
Ae triseriatus	1		Nebraska, USA (18)
Ae trivittatus larvae	3/59 pools		Collected in spring; overwintered in egg state; MA, USA (17)
Ae trivittatus adults	4/36 pools		Adults reared from field collected larvae; MA, USA(17)
White-tailed deer		2%/216 NT	SW Wisconsin, USA (13)

Antibodies neutralizing trivittatus virus have been found in man, horses, cottontail rabbits and sentinel rabbits but cannot be sure that all of these reactions are caused by trivittatus antibodies and not antibodies produced by other California group viruses (7-11).

Experimental host and age	Passage history and strain	Inoculation Route-Dose	Evidence of infection	AST (days)	Titer log ₁₀ /ml
Mice (nb)		ic 0.02	Death	4-5	6.5
Mice (nb)		ip 0.05	Death	4-5	6.5
Mice (nb)		sc			
Mice (wn)		ic 0.02	Death	4-5	5.0
Mice (wn)		ip 0.05	None		
Mice (nb)		sc 0.05	Viremia	4-5	
Mice (9 day)		sc 0.05	Viremia	4-5	
Mice (10 day)		sc 0.05	Viremia	4-6	
Mice (11 day)		sc 0.05	Viremia	4-6	
chicks (2 day)		sc 0.05	None		
Sciurus carolinensis (gray squirrel)			None (12)		
Tamias striatus griseus (chipmunk)			Viremia in 2/6 (12)		
white-tailed deer		sc	Viremia in 1/3 (14)		
rabbits			Viremia in 4/10 (16)		

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.)

Serologic evidence for human infections

Section XII - Geographic Distribution

Known (Virus detected)

North Dakota; Iowa; Wisconsin; Illinois; Ohio; Florida; Alabama; Minnesota (15); Massachusetts (17); Nebraska (18), USA

Suspected (Antibody only detected)

Section XIII - References

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Remarks