

Status: Possible Arbovirus

Select Agent:

SALS Level: 2

SALS Basis: S

Antigenic Group: B

HEPA Filtration:

Taxonomic status: *Flavivirus*

Other Information: None.

Section I - Full Virus Name and Prototype Number**Full Virus Name:****Prototype Number:**

Stratford

C338

Information from: R.L. Doherty**Date:**

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2/5/1985

Address: Queensland Institute of Medical Research, Herston, Brisbane, Australia

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Reviewed by editor

Section II - Original Source**Isolated by:** Doherty, et al. (1)**at:** Brisbane**Genus and species:** Aedes (Ochlerotatus) vigilax (Skuse)**Sentinel:** X**Age/Stage:** Adult**Sex:** F**Isolated From****Isolation detail****Signs and symptoms of illness:**

Arthropod engorged depleted gravid

Time held alive before inoculation:**Collection date:** 4/1/1961 **Method:** Aspirated while biting man**Place collected:** Stratford suburb of Cairns, Australia**Latitude:** 16° 55' " S **Longitude:** 145° 47' " E**Macrohabitat:** Coastal plain, originally rainforest**Microhabitat:** In rainforest on hillside, about 400 yards from mangroves on Barron River**Method of storage until inoculated:** Dry ice for 1 week; then Revco**Footnotes:****Section III - Method of Isolation and Validity****Inoculation Date:** 6/29/1961**Animal:** nb mice **Embryonated egg:** **Tissue Culture:**

(Details in Section VI - Biologic Char.)

Route inoculated: Intracerebral **Reisolation:** Yes**Other reasons:** One other isolation in the same area.**Homologous antibody formation by source animal (See Section II):****Test used:** HI CF NT**Other:****Footnotes:**

Section IV - Virus Properties

Physicochemical:

RNA: DNA: Single Strand: Double Strand:
Pieces: Infectivity: Sedimentation coefficient(s): /strong>
Percentage wt. of virion protein , lipid carbohydrate
Virion polypeptides:
Number: Details:
Non-virion polypeptides:
Number: Details:
Virion density:
Nucleocapsid density Sedimentation coefficient:
Sedimentation coefficient:

Stability of infectivity (effects) pH

Lipid solvent:
(ether) After treatment titer Control titer
(chloroform) After treatment titer Control titer
Detergent:
(deoxycholate) After treatment titer Control titer
Other (formalin, radiation):

Virion morphology:

Shape Dimensions
Mean (nm) range (nm) how measured
Surface projections, envelope
Nucleocapsid dimensions, symmetry

Morphogenesis:

Site of constituent formation in cell
Site of virion assembly
Inclusion bodies
Other

Hemagglutination:

Hemagglutination Yes Antigen source SMB ext. by sucrose-acetone or acetone-ether
Erthrocytes Goose pH range 6.4-7.6 pH optimum 6.8-7.0

Temperature optimum 37dC used routinely range Not tested

Remarks

Serologic methods recommended CF, HI, NT

Footnotes:

Section V - Antigenic Relationship And Lack of Relationship To Other Viruses

Initial studies in Brisbane [1] are listed below.

Immune Sera or Antigens/ viruses	Stratford (C338) Antigen				Stratford (C338) Antiserum					
	HI		CF		NT	HI		CF		NT
	Ht/Ho	Indx	Ht/Ho	Indx	Ht/Ho	Ht/Ho	Indx	Ht/Ho	Indx	Ht/Ho
MVE	160/>640	1/4	32/128	1/4	2.0/3.0	40/80	1/2	<8/64	<1/8	3.0/3.0
JBE	320/320	1	16/32	1/2	2.0/>6.0	10/80	1/8	<8/64	<1/8	3.0/3.0
Kunjin	640/320	2	64/64	1		20/80	1/4	8/64	1/8	
Kokobera	80/640	1/8	32/32	1	1.1/>5.0	40/80	1/2	8/64	1/8	4.8/3.0
Edge Hill	40/320	1/8	16/128	1/8	1.1/>3.2	40/80	1/2	32/64	1/2	2.6/3.0
Dengue 1			8/16	1/2		<10/80	<1/8	<8/64	<1/8	
Dengue 2	40/160	1/4	<8/64	<1/8		40/80	1/2	<8/64	1/8	

NT: LNI given in dex.

Further investigations at the Rockefeller Foundation Virus Laboratories, New York showed C338 to be distinct from Tembusu, Rio Bravo, Bussuquara, dengue 1, dengue 2, dengue 3, dengue 4, Edge Hill, Ilheus, Japanese B encephalitis, Kokobera, Kunjin, Modoc, MVE, Negishi, Ntaya, Powassan, RSSE, Usutu, Banzi, Spondweni, St. Louis encephalitis, Israel turkey meningo- encephalitis, Uganda S, West Nile, yellow fever and Zika.
For further information on antigenic classification, see Reference [7].

Section VI - Biologic Characteristics

Virus source (all VERTEBRATE isolates): tongue and foot lesions (LV)

Lab Methods of Virus Recovery (ALL ISOLATIONS): newborn mice

Susceptibility of Cell Culture Systems:

Cell system (a)	Virus passage history (b)	Evidence of Infection							
		CPE			PLAQUES				
		Day (c)	Extent (d)	Titer TCID ₅₀ /ml (e)	Day (c)	Size (f)	Titer PFU/ml (e)		
PS (CL)	P-9	14	2+3+	5.0* (4)	8	1.5 mm	5.1 (4)		
BHK-21 (CL)	MB 5		No CPE (5)						
Vero (CL)	P-6					No plaques (6)			
LLC-MK2 (CL)					4	2 mm	9.6 (6)		

* Expressed in dex

Section VII - Natural Host Range

Vertebrate (species and organ) and arthropod	No. isolations/No. tested	No. with antibody/No. tested Test used	Country and region
Aedes vigilax	2/1,720		Cairns, north Queensland, AS; 1961
Cattle			Suggestive evidence of antibody in Queensland cattle(3)

Section VIII - Susceptibility To Experimental Infection (Record Viremia)

Experimental host and age	Passage history and strain	Inoculation Route- Dose	Evidence of infection	AST (days)	Titer log ₁₀ /ml	
Mice (nb)	C338,	ic 0.01	Death	7-9	8.0	
Mice (nb)	SMB 3	ip 0.03	Death	8-12	7.2	
Mice (nb)		sc				
Mice (wn)		ic 0.03	Death	>14	4.0	
Mice (wn)		ip 0.03	Antibody formation			

Section IX - Experimental Arthropod Infection And Transmission

Arthropod species & virus source(a)	Method of Infection log10/ml (b)		Incubation period (c) Days	Transmision by bite (d)		Assay of arthropod, log10/ml (e)		
	Feeding	Injected		Host	Ratio	Whole	Organ	System
Culex quinquefasciatus	Adult mosquitoes intrathoracically inoculated; virus content of mosquitoes titrated in mice: 2.8/mosquito at 10 days (<1.3/mosquito days 1-8) (2). Adult mosquitoes exposed to virus by membrane feeding; <1.87/mosquito days 1-20 (2).							

Section X - Histopathology

Character of lesions: Not studied

Inclusion bodies:

Cytoplasmic:(M) (LV) Intranuclear: (M) (LV)

Organs-tissues affected:

Category of tropism:

Section XI - Human Disease

Human disease:	In nature:	(S) (R)
	Death:	(S) (R)
	Residua:	(S) (R)
Laboratory infections:	Subclinical:	(S) (R)
	Overt Disease:	(S) (R)

Clinical manifestations:

Category: No. of cases:

Section XII - Geographic Distribution

Known (virus):

Australia

Section XIII - References

1. Doherty, R.L., et al. 1963. Aust. J. Exp. Biol. Med. Sci. 41:17-40.
2. Standfast, H.A. and Carley, J.G. 1963. Personal communication.
3. Sanderson, C.J. 1969. Am. J. Trop. Med. Hyg. 18:433-439.
4. Westaway, E.G. 1966. Am. J. Epidemiol. 84:439-456.
5. Karabatsos, N. and Buckley, S.J. 1967. Am. J. Trop. Med. Hyg. 16:99-105.
6. Stimpson, T.B. 1969. J. Gen. Virol. 5:329-338.
7. De Madrid, A.T. and Porterfield, J.S. 1974. J. Gen. Virol. 23:91-96.

Section XIV - Remarks