

Virus Name: **Wongal**

Abbreviation: **WONV**

Status: Probable Arbovirus

SALS Level: 2

Antigenic Group: Koongal

Taxonomic status: *Bunyavirus-like*

Other Information: None.

Select Agent:

SALS Basis: S

HEPA Filtration:

Section I - Full Virus Name and Prototype Number

Full Virus Name:

Wongal

Prototype Number:

MRM 168

Information from: R.L. Doherty

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Date:

2/5/1985

Address: Queensland Institute of Medical Research, Herston N9, Brisbane, AS

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Reviewed by editor

Section II - Original Source

Isolated by: Doherty, et al. (1)

at: Brisbane

Genus and species: *Culex annulirostris*

Sentinel X

Age/Stage: Adult

Sex: F

Isolated From	Isolation detail
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Signs and symptoms of illness:

Arthropod engorged depleted gravid

Time held alive before inoculation:

Collection date: 4/7/1960

Method: Aspirated from man or horse

Place collected: Mitchell River Mission, Queensland, AS

Latitude: 15° 30' " S

Longitude: 141° 40' " E

Macrohabitat: Low-lying plain bordering Gulf of Carpentaria; open forest-grassland

Microhabitat: This pool was collected in grove of mango trees 20 yds from creek

Method of storage until inoculated: Dry ice and Revco

Footnotes:

Section III - Method of Isolation and Validity

Inoculation Date: 9/29/1960

Animal: nb mice

Embryonated egg:

Tissue Culture:

(Details in Section VI - Biologic Char.)

Route inoculated: Intracerebral

Reisolation: Yes

Other reasons: Other isolations from 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:	Sedimentation coefficient:
Nucleocapsid density	Sedimentation coefficient:

Stability of infectivity (effects) pH

Lipid solvent:

(ether)	After treatment titer	Control titer
(chloroform)	After treatment titer	Control titer
Detergent:		
(deoxycholate) 1:500	After treatment titer 2.5 dex	Control titer 5.5 dex
Other (formalin, radiation):		

Virion morphology:

Shape	Bunyavirus-like morphology (3)	Dimensions	90 - 95 nm
Mean (nm)	range (nm)	how measured	Electron microscopy (3)
Surface projections, envelope	Envelope observed (3)		
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; acetone-ether		
Erthrocytes	Goose	pH range	5.8-6.4	pH optimum	6.0-6.2
Temperature optimum	37dC used routinely	range	Not tested		
Remarks					
Serologic methods recommended	HI, CF, NT				
Footnotes:					

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

Initial studies [1] showed that MRM168 was related to MRM31 (Koongol); no relationship could be demonstrated to MVE, Kunjin, Kokobera, Edge Hill, Stratford, Getah, Bebaru, Sindbis, Corriparta and Mapputta.

Wongal (MRM168) Antigen					
Immune Serum	HI		CF		NT
	Ht/Ho	Ratio	Ht/Ho	Ratio	Ht/Ho
Koongol (MRM 19)	<10/640	<1/64	8/16	1/2	1.4/3.3
NT: LNI in dex					

Wongal (MRM168) Antiserum					
Antigen	HI		CF		NT
	Ht/Ho	Ratio	Ht/Ho	Ratio	Ht/Ho
Koongol (Several strains)	<10/40	<1/4	8/8	1	<1.8/2.3
NT: LNI in dex					

Studies at the Rockefeller Foundation Virus Laboratories confirmed the relationship of Wongal to Koongol, but showed no relationship between Wongal and:

Catu	Anopheles A	Guajara
Simbu	Ketapang	Aruac
Pongola	Umbre	Ieri
SF Naples	Lebombo	Trinita
SF Sicilian	California	Lukuni
Lunyo (variant of Rift Valley fever)	Colorado tick fever	Anopheles B
Witwatersrand	Navarro	
Quaranfil	Bakau	Akabane
Bwamba	Nyamanini	
Chenuda	Tahyna	Group immune sera to Groups A, B, C and Bunyamwera
Turlock	Junin	
Tacaiuma	Guama	
Wad Medani	Mirim	
Wyeomyia	Hart Park	
Kairi	Nepuyo	Oropouche
Manzanilla		AN 20076
		Guaroa
		Capim

Section VI - Biologic Characteristics

Virus source (all VERTEBRATE isolates):

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			Growth Without CPE +/- (g)
		Day (c)	Extent (d)	Titer TCD50/ml (e)	Day (c)	Size (f)	Titer PFU/ml (e)	
Vero (CL)	P-9				10	2 mm	5.0* (8)	
LLC-MK2 (CL)						No plaques (8)		

Repeated attempts at QIMR have failed to show any usable cell culture assay system in PS (CL), BHK-21 (CL), Vero (CL), and VSW (CL) cells.

* 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
Culex annulirostris	3/6,703		Mitchell River, Queensland, AS; 1960
Culex annulirostris	2/2,260		Mitchell River, Queensland, AS; 1961
Culex annulirostris	1/1,970		Normanton, Queensland, AS; 1961
Coquillettidia crassipes	1/11,812		Innisfail, N. Queensland, AS; 1963-64 (4)
Vertebrates			Low titer HI responses have been found in cattle (5,6), domestic fowl (6,7), wallabies (6), wild birds (6), and bandicoots (6), but have not been confirmed by NT.

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 log10/ml
Mice (nb)	SMB 4	ic 0.01	Death	5.0	7.9
Mice (nb)		ip 0.03	No illness or death		
Mice (nb)		sc			
Mice (wn)	SMB 4	ic 0.03	Death	10.1	6.7
Mice (wn)		ip 0.03	No illness or death; antibodies develop		
embryonated eggs		ys 0.1	No deaths at 10-2		
embryonated eggs		CAM 0.05	Irregular pock production to 10-5		

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
Culex quinquefasciatus	Adult mosquitoes intrathoracically inoculated; virus content of mosquitoes titrated in mice: 2.8/mosq. at 8 days. (4)								
	Adult mosquitoes exposed to virus by membrane feeding: <1.87/mosq. at 1-30 days (>2.6 after feeding)								

Section X - Histopathology

Character of lesions:

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

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3. Holmes, I.H. Personal communication. 1971.
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Section XIV - Remarks
