

Virus Name: Wongal		Abbreviation: WONV
Status Probable Arbovirus	Select Agent No	SALS Level 2
SALS Basis Results of SALS surveys and information from the Catalogue.		
Other Information		
Antigenic Group Koongal		

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation MRM 168	Accession Number	Original Date Submitted 2/5/1985
Family Bunyaviridae	Genus Bunyavirus-like	
Information From R.L. Doherty	Address Queensland Institute of Medical Research, Herston N9, Brisbane, AS	
Information Footnote Reviewed by editor		

Section II - Original Source

Isolated By (name) Doherty, et al. (1)	Isolated at Institute Brisbane	
Host Genus Culex annulirostris	Species	Host Age/Stage Adult
Sex Female		
<u>Isolated From</u>	<u>Isolation Details</u>	
Signs and Symptoms of Illness	Arthropod	
Time Held Alive before Inoculation		
Collection Method Aspirated from man or horse	Collection Date 4/7/1960	
Place Collected (Minimum of City, State, Country) 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

Inoculation Date 9/29/1960	
Animal (Details will be in Section 6) nb mice	
Route Inoculated Intracerebral	Reisolation Yes
Other Reasons Other isolations from the same area	
Homologous Antibody Formation by <u>Source Animal</u>	
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)	
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<u>Stability of Infectivity (effects)</u>		
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) 1:500	After Treatment Titer 2.5 dex	Control Titer 5.5 dex
Other (formalin, radiation)		
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<u>Virion Morphology</u>		
Shape Bunyavirus-like morphology (3)	Dimensions 90 - 95 nm	
Mean nm	Range nm	
Measurement Method Electron microscopy (3)	Surface Projections/Envelope Envelope observed (3)	Nucleocapsid Dimensions, Symmetry

Morphogenesis

Site of Constituent Formation in Cell	Site of Virion Assembly	Site of Virion Accumulation
Inclusion Bodies	Other	

Hemagglutination

Hemagglutination Yes	Antigen Source SMB ext. by sucrose-acetone; acetone-ether	Erythrocytes (species used) Goose
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pH Range 5.8-6.4	pH Optimum 6.0-6.2
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Temperature Range Not tested	Temperature Optimum 37dC used routinely
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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	Triniti
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

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 (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
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 (include viremia)

Experimental host and age	Passage history and strain	Inoculation Route-Dose	Evidence of infection	AST (days)	Titer log ₁₀ /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 (specify host)		
<u>Inclusion Bodies</u>	<u>Intranuclear</u>	
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)
Australia
Suspected (Antibody only detected)

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. Personal communication. 1963. 3. Holmes, I.H. Personal communication. 1971. 4. Doherty, R.L., et al. 1968. Trans. R. Soc. Trop. Med. Hyg. 62:862-867. 5. Sanderson, C.J. 1969. Am. J. Trop. Med. Hyg. 18:433-439. 6. Doherty, R.L., et al. 1970. Trans. R. Soc. Trop. Med. Hyg. 64:748-753. 7. Doherty, R.L., et al. 1970. Trans. R. Soc. Trop. Med. Hyg. 64:740-747. 8. Stim, T.B. 1969. J. Gen. Virol. 5:329-338. 9. Casals, J. 1963. Anais de Microbiologia, XI (Parte A):13-34.
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Remarks
