Virus Name: **Simbu** **Abbreviation:** **SIMV**

Status: Probable Arbovirus
SALS Level: 2
Antigenic Group: Simbu
Taxonomic status: *Bunyavirus*
Other Information: None.

Select Agent:
SALS Basis: S
HEPA Filtration:

Section I - Full Virus Name and Prototype Number

Full Virus Name:
Simbu

Prototype Number:
SAAr 53

Information from: B.M. McIntosh
*

Date:
10/13/1984

Address: National Institute for Virology, P/Bag X4, Sandringham, 2131, South Africa
*
Revised

Section II - Original Source

Isolated by: M.P. Weinbren, et al. (1) **at:** S. Afr. Inst. Med. Res., Johannesburg
Genus and species: Aedes circumluteolus **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: 1 day
Collection date: 4/26/1955 **Method:** By hand off vegetation
Place collected: Lake Simbu, Pongola River, Natal, South Africa
Latitude: 27° ' " S **Longitude:** 32° ' " E
Macrohabitat: Tropical, coastal lowland; savannah woodland
Microhabitat:
Method of storage until inoculated: Held alive
Footnotes:

Section III - Method of Isolation and Validity

Inoculation Date: 4/27/1955
Animal: nb mice **Embryonated egg:** **Tissue Culture:**
(Details in Section VI - Biologic Char.)
Route inoculated: Intracerebral **Reisolation:**
Other reasons: Further isolations from same mosquito at same place in 1957.
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) **After treatment titer** **Control titer**
Other (formalin, radiation):

Virion morphology:
Shape **Dimensions**
Mean (nm) **range (nm)** **how meansured**
Surface projections, envelope
Nucleocapsid dimensions, symmetry

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

Hemaggiutination:
Hemaggiutination Yes and No **Antigen source** SMB ext. by sucrose-acetone
Erthrocytes Goose **pH range** 6.0-7.0 **pH optimum**
Temperature optimum Room temp. **range**
Remarks * Hemagglutination has been described for this virus since the initial negative attempts.
Serologic methods recommended CF, NT
Footnotes: * Hemagglutination has been described for this virus since the initial negative attempts.

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

Virus or Antibody	SIM Virus			SIM Antibody		
	CF (2)	CF (3)	NT (5)	CF (2)	CF (3)	NT (5)
Akabane	8	2	>3.9	2	8	>2.2
Ingwavuma	>512		>3.2	>2048		1.7
Nola	>1024			>2048		
Sabo	32	>32	>2.3	8	2	2.2
Sango	32		>3.6	8		>1.1
Sathuperi	8	16		4	4	>1.5
Shamonda	4		2.7	2		2.8
Shuni	32	4	>2.8	8	8	3.0
Thimiri	>512	128	1.5	>2048		
Manzanilla		>64	>2.6			2.2
Buttonwillow		>2	>2.5			2.0
Oropouche		>32	>2.3			>1.7
Utinga		32	1.5			1.7
Aino			>0.7			>2.6
Mermet			2.8			>2.1

CF results as quotient of homologous/heterologous titers; NT results as difference in LNI from homologous, given in dex.

Prototype virus of Simbu serogroup [4] . Distinct from other serogroup viruses by cross-neutralization testing [15] .

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	
		Day (c)	Extent (d)	Titer TCD50/ml (e)	Day (c)	Size (f)	Titer PFU/ml (e)	+/- (g)	
Vero (CL)	MB 12				2	4 mm	6.9* (6)		
LLC-MK2 (CL)					3	6 mm	5.6 (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
Man		2/535 NT	Natal, Sth Africa(7)
Man		2/150 NT	Botswana (8)
Aedes circumluteolus	3		Natal, South Africa (1, 9, 10)
Aedes dalzieli	1		Senegal (11)
Aedes vittatus	2		
Coquillettidia fraseri	1		Cameroun (12)
Aedes cumminsii	1		Centr. Afr. Rep.(12)
Aedes circumluteolus	1		
Eretmapodites chrysogaster group	1		Cameroun (12)
Aedes palpalis group	1		Centr. Afr. Rep.(12)

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)	Ar 53	ic	Death	2-5	7.9
Mice (nb)		ip	Death	3-7	6.9
Mice (nb)		sc			
Mice (wn)		ic	Death	4-9	6.9
Mice (wn)		ip			
Cercopithecus aethiops		sc	Antibody		
rabbit		ic	Antibody		
guinea pig		ic	Antibody		
wild rodents:					

Mystromys albicandatris			Viremia		4.2
Saccostomus campestris			Viremia		5.8

Section IX - Experimental Arthropod Infection And Transmission

Arthropod species & virus source(a)	Method of Infection log10/ml (b)		Incubation period (c)		Transmision by bite (d)		Assay of arthropod, log10/ml (e)		
	Feeding	Injected	Days	°C	Host	Ratio	Whole	Organ	System
Culex quinquefasciatus	Successfully passaged five times through salivary glands (13)								
Aedes aegypti	Successfully passaged five times through salivary glands (13)								
Aedes aegypti	7.0		15	26	hamster		2 infected mosq. failed to transmit; mosq.infection rate 2/4(14)		

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):

South Africa (1,9,10), Senegal (11), Cameroun (12), Central African Republic (12)

Suspected (antibody):

Botswana (8)

Section XIII - References

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Section XIV - Remarks