

Virus Name: Rocio		Abbreviation: ROCV
Status Arbovirus	Select Agent No	SALS Level 3
SALS Basis Results of SALS surveys and information from the Catalogue.		
Other Information DOC Permit Required, Hepa Filtration		
Antigenic Group B		

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation SPH 34675	Accession Number	Original Date Submitted 8/20/1984
Family Flaviviridae	Genus Flavivirus	
Information From Dr. Oscar de Souza Lopes	Address Instituto Adolfo Lutz, Caixa Postal 7027, Sao Paulo, Brazil	
Information Footnote Reviewed by editor		

Section II - Original Source

Isolated By (name) Dr. Oscar de Souza Lopes, et al.	Isolated at Institute Instituto Adolfo Lutz, Caixa Postal 7027, Sao Paulo, Brazil	
Host Genus Man	Species	Host Age/Stage 39 years
Sex Male		
<u>Isolated From</u>	<u>Isolation Details</u>	
Organs/Tissues	Brain (cerebellum) and upper spinal cord	
Signs and Symptoms of Illness Encephalitis, fever, coma (incomplete clinical record)	Arthropod	
Time Held Alive before Inoculation		
Collection Method Post-mortem examination	Collection Date 12/8/1975	
Place Collected (Minimum of City, State, Country) Iguape County, State of Sao Paulo		
Latitude 24° 45' S	Longitude 47° 35' W	
Macrohabitat Large flat plain at sea level	Microhabitat Banana plantation	Method of Storage until Inoculated Electrical deep-freezer at -60dC
Footnotes		

Section III - Method of Isolation

Inoculation Date
12/23/1975

Animal (Details will be in Section 6)
nb mice

Route Inoculated Intracerebral	Reisolation Yes
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Other Reasons
A new virus for the laboratory

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) 1:1000	After Treatment Titer <2.5 dex	Control Titer >6.0 dex
Other (formalin, radiation)		

Virion Morphology

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

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

6.0-6.8

6.4

Temperature Range

Temperature Optimum

22dC

Remarks

Serologic Methods Recommended

NT, CF, HI

Footnotes

Virus or Antiserum	SPH 34675 Antigen or Virus			SPH 34675 Antibody		
	HI	CF	NT	HI	CF	NT
ILH	20/160 ^a	32/64 ^a	<10/>640 ^a	20/160	128/>1024	<10/1280
SLE	10/80	64/512	10/>320	80/160	128/>1024	<10/1280
YF	10/80	8/128	<10/640	80/160	32/>1024	<10/1280
WN	10/80	32/256	<10/2560	20/160	32/>1024	<10/1280
JE	40/640	32/>1024	<10/>1280	80/160	64/>1024	<10/1280
MVE	40/>1280	64/512	10/160	80/160	128/>1024	10/1280
ZIKA	10/40		<10/80	10/160		<10/1280
BSQ	<10/80		<10/>1280	10/160		<10/1280
DEN-2	<10/80		<10/	10/160		
JUT	<10/320		<10/>80	20/160		
CR	<10/80		<10/>80	<10/160		
RB	40/>1280	16/64	<40/40	80/160	16/>1024	<10/1280
TMU	<10/160		<10/	40/160		
UGS	10/80	32/>1024	<10/1280	20/160	16/>1024	160/1280
MOD	20/40	32/32	<10/>1280	10/160	<8/>1024	<10/1280
MML	<10/160		<10/>1280	<10/160		<10/1280
APOI	20/160			40/160		
DB	10/40			20/160		
POW	<10/80		<10/640	<10/160		<10/1280
LGT	<10/80			10/160		

^a Heterologous titer/homologous titer

Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)
CNS (M), 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)	
Vero (CL)					4	4-5 mm	10.1 ^b	
Duck embryo (PC)					4	5-6 mm	5.0	
MA-111 (CL)					4	1 mm	8.8	
PS (CL)					3	8- 11mm	9.7	
BHK-21 (CL)					5	4-5 mm	10.2	
MA-104 (CL)					4	1 mm	8.4	
Human skin (CL)					4	4 mm	10.0 (1)	

^b Expressed in dex

Vertebrate (species and organ) and arthropod	No. isolations/No. tested	No. with antibody/No. tested Test used	Country and region
Man (post-mortem examination; brain and cord)	9/19		Sao Paulo State, Several counties at Sea Coast and Rio Ribeira Valley, Brazil
Man - healthy		39/150 HI	
Man (with encephalitis; isolations from acute serum)	0/516	195/230 HI CF	
Wild birds		34/153 HI	Peruibe-Itanhaem area Brazil
Wild birds (blood)	1/1077 *		Several counties from Rio Ribeira Valley
Psorophora ferox	1/19		Cananeia, Brazil(2, 4)
Sentinel mice	1		Sao Paulo, Brazil (3)

* Virus isolated from a rufous-collared sparrow (*Zonotrichia capensis*)

Experimental host and age	Passage history and strain	Inoculation Route-Dose	Evidence of infection	AST (days)	Titer log ₁₀ /ml	
Mice (nb)	SPH 34675, SMB 2	ic	Death	4.0	10.0	
Mice (nb)		ip	Death	4.5	8.9	
Mice (nb)		sc				
Mice (wn)		ic	Death	6.5	9.0	
Mice (wn)		ip	Death	8.5	7.7	
Mice (6-8 wk)		ip	Death	12.0	6.4	
hamster (nb)		ic	Death	2.0	>11.2	
hamster (nb)		ip	Death	6.0	>10.9	
hamster (3 wk)		ic	Death	10-17	4.9	
hamster		ip			<3.5	
hamster (6-8 wk)		ic	Death	20-25	3.4	
hamster		ip			<3.5	
chickens (<24 hr)		sc	Viremia		>5.0	
Passer domesticus (house sparrow) nestling and adults		sc	Viremia (1-3 days'duration)		2.0-5.0	

Section IX - Experimental Arthropod Infection and Transmission

Arthropod species & virus source(a)	Method of Infection log10/ml (b)		Incubation period (c)		Transmission by bite (d)		Assay of arthropod, log10/ml (e)		
	Feeding	Injected	Days	°C	Host	Ratio	Whole	Organ	System

Rocio virus transmitted by mosq. of various species infected per os. Species were Culex tarsalis from Arizona, Cx pipiens pipiens from Illinois (rel. efficient); Tenn. Cx pipiens subspecies, and Argentina Cx pipiens quinquefasciatus (mod. efficient); Louisiana Psorophora ferox, Cx nigripalpus and Cx (Melanoconion) opisthopus (rel. inefficient)(5).

Section X - Histopathology

Character of lesions (specify host)

Microglial and inflammatory cells infiltration, perivascular lymphocyte cuffing, neuronal degeneration and focal necrosis, mainly in the spinal cord, brain stem, dentate nucleus, hypothalamus and thalamus.

Inclusion Bodies

Intranuclear

Organs/Tissues Affected

CNS, brain

Category of tropism

Neurotropic; encephalitis

Section XI - Human Disease

In Nature
Significant

Residual
Significant

Death
Significant

Subclinical
Reported

Overt Disease
Significant

Clinical Manifestations
clin_manif Encephalitis

Number of Cases
About 900

Category (i.e. febrile illness, etc.)
Encephalitis

Section XII - Geographic Distribution

Known (Virus detected)
Sao Paulo State, Brazil

Suspected (Antibody only detected)

Section XIII - References

1. Perry, V.P., et al. 1956. Am. J. Hyg. 63:52-58.
2. Lopes, O.S. and Franczy, D.B. Personal communication. 1979.
3. De Souza Lopes, O., et al. 1978. Am. J. Epidem. 107:444-449.
4. De Souza Lopes, O., et al. 1981. Am. J. Epidem. 113:122-125.
5. Mitchell, C.J., et al. 1981. Am J. Trop. Med. Hyg. 30:465-472.

Remarks

Confirmation of SPH 34675 virus identification and part of its characterization were performed by Dr. Charles Calisher, Vector-Borne Diseases Division, Center for Disease Control, and Dr. Francisco Pinheiro, Instituto Evandro Chagas.