Virus Name: Aino	Abbreviation: AINOV

Status
Possible Arbovirus

Select Agent
No

SALS Level
3

SALS Basis
Results of SALS surveys and information from the Catalogue.

Other Information

Antigenic Group
Simbu

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation
JaNAr 28

Accession Number

Original Date Submitted
11/2/1984

Family
Bunyaviridae

Genus
Bunyavirus

Information From
Katsumi Takahashi

Address
Nagasaki Prefectural Institute of Public Health, Nagasaki, Japan

Information Footnote
Reviewed by editor

Section II - Original Source

Isolated By (name)
K. Takahashi, et al (2)

Isolated at Institute
Nagasaki Prefecture, Japan

Host Genus
Culex tritaeniorhynchus

Species

Host Age/Stage

Sex
Not Answered

Isolated From

Isolation Details

Signs and Symptoms of Illness

Arthropod

Time Held Alive before Inoculation

Collection Method
Caught by aspirator

Collection Date
9/14/1964

Place Collected (Minimum of City, State, Country)
Aino town, Nagasaki prefecture, Japan

Latitude
32° 8' N

Longitude
130° 9' E

Macrohabitat
Rural village at rice field area

Microhabitat
Livestock pens

Method of Storage until Inoculated
Stored in dry ice box

Footnotes

Section III - Method of Isolation

Inoculation Date
9/19/1964

Animal (Details will be in Section 6)
nb mice

Route Inoculated
Intracerebral

Reisolation
Not tried

Other Reasons
Two other isolationsin the same area

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) **20%**	After Treatment Titer **1.4 dex**	Control Titer **6.0 dex**
Lipid Solvent (chloroform)	After Treatment Titer	Control Titer
Lipid Solvent (deoxycholate) **0.1%**	After Treatment Titer **4.0 dex**	Control Titer **7.0 dex**

Other (formalin, radiation)
Infective particle was not precipitated with protamine sulphate

Virion Morphology

Shape	Dimensions **<220 nm**	
Mean nm	Range nm	
Measurement Method **Passed filter APD 220 nm but not APD 100 nm**	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

Hemaggiutination	Antigen Source	Erythrocytes (species used)
No	**SMB ext. by sucrose-acetone**	**Young chick**
pH Range **6.0-7.0**	pH Optimum	
Temperature Range	Temperature Optimum	

Remarks
CF, NT

Serologic Methods Recommended

Footnotes
CF, NT

Section V - Antigenic Relationship and Lack of Relationship to Other Viruses

Aino virus is a member of the Simbu group as shown by CF results. CF relationship demonstrated as follows:

Cross-complement fixation tests among Aino (JaNAr 28) and representative Simbu group arboviruses.

Antigen	Serum						
	JaNAr 28	Akabane	Simbu	Sathuperi	Oropouche	Ingwavuma	Manzanilla
JaNAr 28	64/256	8/128	32/256	32/64	4/64	4/4	0/0
Akabane	16/512	64/512	32/256	16/128	4/256	4/4	8/128
Simbu	16/512	32/256	128/256	32/256	8/256	4/128	0/0
Sathuperi	16/512	32/512	32/512	128/512	8/1024	4/8	0/0
Oropouche	0/0	8/128	16/256	4/64	128/1024	16/512	16/512
Ingwavuma	0/0	0/0	0/0	0/0	4/128	128/512	16/1024
Manzanilla	0/0	0/0	0/0	0/0	8/256	16/1024	256/512
Normal mouse brain	0/0	0/0	0/0	0/0	0/0	0/0	0/0

Serum titer/antigen titer; 0/0 = <4/<4

NT studies conducted in Japan have indicated that Samford is antigenically identical to Aino virus [7] .

Studies published in 1981 indicate that Aino virus is a member of the Simbu complex by NT. Results also indicated that Kaikalur virus was at least a variety of Aino virus [8] .

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
		Day (c)	Extent (d)	Titer TCD50/ml (e)	Day (c)	Size (f)	Titer PFU/ml (e)	+/- (g)
PS (CL)	SMB 3				3-6	Plaques	7.7 *(4)	
VSW (CL)		3	CPE	> 6.0 *(5)				

* 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. tsted Test used	Country and region
Culex tritaeniorhynchus	2/145 pools **		Nagasaki Prefecture,Japa n
Culex pipiens and Culex pseudovishnui complex	1/11 pools **		
Culicoides brevitarsis	3/17,907		SE Queensland, Australia (3)
Cattle		82/159	Queensland, Australia (3)
Horse		2/36	Queensland, Australia (2)

** Pools consisted of 100-200 insects per pool

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 log10/ml
Mice (nb)	SMB 3	ic 0.02	Death	2	8.2
Mice (nb)		ip 0.1	No deaths		
Mice (nb)		sc			
Mice (wn)		ic 0.02	Death	3	7.5
Mice (wn)		ip 0.1	No deaths		
guinea pig (1 mo)		ic 0.1	No deaths		
rabbit (1 mo)		iv 0.2	No deaths		
rabbit (1 mo)		ic 0.1	No deaths		

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
Aedes aegypti , Samford(B7974) strain, SMB 3	Intrathoracically inoculated (0.0006 ml = 4.0 dex LD50/mosq.); titer of whole mosq. in infant mice; 4.0 - 5.0 dex DL50 per mosq. 12-20 days pi (6).								

Section X - Histopathology

Character of lesions (specify host)

Inclusion Bodies — Intranuclear

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)
Aino, Kyushu, Japan; Southeast Queensland, Australia

Suspected (Antibody only detected)

Section XIII - References

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Remarks