

Virus Name: Ntaya

Abbreviation: NTAV

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

Select Agent:
SALS Basis: S

HEPA Filtration:

Section I - Full Virus Name and Prototype Number

Full Virus Name: Ntaya
Prototype Number: Original
Information from: J.P. Woodall *
Date: 2/3/1985
Address: YARU, Yale Univ. Sch. Med., New Haven, Connecticut 06510
*
Reviewed by editor

Section II - Original Source

Isolated by: Smithburn and Haddow (1) **at:** Entebbe
Genus and species: Mosquitoes (5 genera, 24 spp.) **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: 2/5/1943 **Method:** Taken off human bait and vegetation
Place collected: Ntaya swamp, Bwamba, Uganda
Latitude: 0° 42' " N **Longitude:** 30° 3' " E
Macrohabitat: Tropical swamp and relict rain forest (Elaeis oil palms)
Microhabitat: Daylight; ground level, outdoors
Method of storage until inoculated: Alive in Barraud cages, air temp.
Footnotes:

Section III - Method of Isolation and Validity

Inoculation Date: 2/22/1943
Animal: nb mice **Embryonated egg:** **Tissue Culture:**
(Details in Section VI - Biologic Char.)
Route inoculated: Intracerebral **Reisolation:** Not tried
Other reasons: Different from all other arboviruses and mouse viruses in laboratory.
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) 1:1000	After treatment titer 2.8 dex loss (3)	Control titer
Other (formalin, radiation):		

Virion morphology:

Shape		Dimensions
Mean (nm)	range (nm)	how measured
Surface projections, envelope		
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 acetone-ether; sucrose-acetone; fluorocarbon
Erthrocytes	Goose	pH range	6.0-6.8 pH optimum 6.5; 6.8 (10)
Temperature optimum	37dC	range	4-37dC

Remarks HA inhibited by choline-containing phospholipids. * Optimal pH for fluorocarbon or sucrose-acetone antigen at room temp. = 6.8 (10). This is one of the highest-titred and most cross-reactive of Group B antigens. HA inhibited by Choline-contai

Serologic methods recommended CF, HI, NT

Footnotes: HA inhibited by choline-containing phospholipids. * Optimal pH for fluorocarbon or sucrose-acetone antigen at room temp. = 6.8 (10). This is one of the highest-titred and most cross-reactive of Group B antigens. HA inhibited by Choline-contai

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

Member of Casals' Group B [6] .

Laboratory-produced animal immune sera for other Group B viruses sometimes cross-reactive in NT, but agent differentiable by NT [7] .

Ntaya virus was compared in cross-neutralization studies with 60 other registered and 5 unregistered flaviviruses. As a result Ntaya virus provisionally was placed in the Tembusu complex consisting of Tembusu, Ntaya, Yokose, Bagaza and Israel turkey meningoencephalitis viruses [23] .

Section VI - Biologic Characteristics

Virus source (all VERTEBRATE isolates): Pool of liver, lung, spleen, kidney, brain (LV)

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 TCDS0/ml (e)	Day (c)	Size (f)	Titer PFU/ml (e)	
BHK-21 (CL)	MB 5	3	CPE	7.5* (20)				
LLC-MK2 (CL)					4	2 mm	5.4*(22)	
Vero (CL)						No plaques (22)		
PS (CL)						No plaques (23)		
Duck embryo (PC)					7	Plaques	6.9* (23)	

* 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		43/0 NT	Tanzania; Uganda (1, 17)
Man		12/177 NT	Philippines
Man		118/204 NT	Malaya, Malaysia (9, 14)
Man		41/50 NT	N. Vietnam (9)
Man		37/50 NT	Thailand (9)
Man		15/83 NT	Singapore (11)
Man		28/55 NT	Borneo, Indonesia (11, 14)
Man		35%/327 NT	Egypt (15)
Man		23/247 NT	India (16)
Mosquitoes: Mixed spp	1/1,318		Uganda
Culex spp.	5		Cameroun (18)
Culex guiarti	1		Centr. Afr. Rep.(19)

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)	P 17	ic 0.02	Death (10)	6	9.5

Mice (nb)		ip			
Mice (nb)		sc			
Mice (wn)	P 2-11	ic 0.03	Death (1)	8.1	4.0-5.0
Mice (wn)	P-56	ic 0.03	Death		6.5
Mice (5 wk)	P-91-100	ic 0.03	Death	5.9	6.5
Mice (5 wk)	up to 100	ip 0.1	Antibody		
hamsters (yg)		ic,sc	Poor antibody response(1)		
rhesus	Mosquito pool	sc	None, no antibody produced(1)		
monkey	Early MB	sc	Antibody appeared after more than 2 inoc.		
chick embryo (12 day)	P-106	ys, am.s.	Death (12)		
chick embryo	P-9-10	CAM, al.c.	Virus mult., occasional death		

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 tarsalis	Haemocoele inoculation; 5 serial passages succeeded. (8)								
Other insect spp.	Haemocoele inoculation; 5 serial passages succeeded. (8)								
Ae aegypti inoculated parenterally maintained the virus through 9 serial salivary gland passages, and Cx quinquefasciatus through 3 passages; An quadrimaculatus failed (21).									

Section X - Histopathology

Character of lesions: In mice: viral encephalitis

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):

Africa: Uganda, Cameroun, Central African Republic

Suspected (antibody):

Far East (9,16): But NT results closely parallel the incidence of Japanese encephalitis positives (4), Tanzania, Egypt.

Section XIII - References

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Section XIV - Remarks