

Virus Name: Tahyna	Abbreviation: TAHV	
Status Arbovirus	Select Agent No	SALS Level 2
SALS Basis <b>Results of SALS surveys and information from the Catalogue.</b>		
Other Information		
Antigenic Group California		

#### SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation <b>92</b>	Accession Number	Original Date Submitted <b>7/25/1984</b>
Family <b>Bunyaviridae</b>	Genus <b>Bunyavirus</b>	
Information From <b>Dr. Vojtech Bardos</b>	Address <b>Institute of Parasitology, Czechoslovak Acad. Sci., 16632 Praha-6, Czechoslovakia</b>	
Information Footnote <b>Revised</b>		

#### Section II - Original Source

Isolated By (name) <b>V. Bardos, and V. Danielova (1)</b>	Isolated at Institute <b>Inst. Epid. Microbiol., Bratislava</b>	
Host Genus <b>Aedes caspius (pool of 50)</b>	Species	Host Age/Stage <b>Adult</b>
Sex <b>Female</b>		
<u>Isolated From</u> <u>Isolation Details</u>		
Signs and Symptoms of Illness	Arthropod <b>Depleted</b>	
Time Held Alive before Inoculation		
Collection Method <b>Entomological nets</b>	Collection Date <b>7/17/1958</b>	
Place Collected (Minimum of City, State, Country) <b>Tahyna village, Czechoslovakia</b>		
Latitude <b>48° N</b>	Longitude <b>2° E</b>	
Macrohabitat <b>Lowland near Tahyna village</b>	Microhabitat <b>Lowland forest and pasture</b>	Method of Storage until Inoculated <b>12 hours at -20dC and 10 days at -35dC</b>
Footnotes		

### **Section III - Method of Isolation**

Inoculation Date  
7/28/1958

Animal (Details will be in Section 6)  
**nb mice**

Route Inoculated  
ic and sc

**No other virus like this in the laboratory.**

### Homologous Antibody Formation by Source Animal

### Test(s) Used

## Footnotes

## Section IV - Virus Properties

## Physicochemical RNA, Single Strand

Pieces (number of genome segments)      Infectivity      Sedimentation Coefficients(s)  
3                  No                  32;24;12-14 (2)(S)

Percentage wt. of Virion Protein Lipid Carbohydrate

### Virion Polypeptides: Number                      Details

**Non-virion Polypeptides: Number                      Details**

### Stability of Infectivity (effects)

pH (infective range)

Lipid Solvent (ether - % used to test) After Treatment Titer Control Titer  
1:5 4.7 dex 6.5 dex (3)

Lipid Solvent (chloroform) After Treatment Titer Control Titer  
1:5 <1.0 dex 6.5 dex

Lipid Solvent (deoxycholate) After Treatment Titer Control Titer  
**1:1000** **3.8 dex** **6.5 dex**

Other (formalin, radiation)

## Virion Morphology

Shape	Dimensions
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Mean nm Range nm

### **Measurement Method** Surface Projections/Envelope

### Nucleocapsid Dimensions, Symmetry

### Morphogenesis

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

Hemagglutination <b>Yes</b>	Antigen Source <b>SMB ext. by sucrose-acetone; Vero cell cultures</b>	Erythrocytes (species used) <b>Goose</b>
pH Range <b>5.7-6.3</b>	pH Optimum <b>6.1</b>	
Temperature Range <b>4dC - 22dC</b>	Temperature Optimum <b>4dC</b>	
Remarks		
Serologic Methods Recommended <b>HI, CF, NT, IFA, counter immunoelectrophoresis</b>		
Footnotes		

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

Not related to the viruses of groups A, B, C, Bunyamwera [5].

#### Relationship between Tahyna and California encephalitis viruses by hemagglutination-inhibition test [5]

Antibody to:	Number of injections	Antigen	
		Tahyna	CE
Tahyna, New York	1	80	10
Tahyna, New York	2	320	40
Tahyna, Porterfield		80	20
California enc.	5	1280	1280
California enc.	6	2560	2560

#### Relationship between Tahyna and California encephalitis virus by neutralization test

Serum	Tahyna (Porterfield)	Virus	
			CE

	Titer, dex	Neutralization index	Titer, dex	Neutralization index
Tahyna, New York	2.7	4000	4.0	300
California enc.	2.7	4000	2.4	12000
Normal	6.3		6.5	

**Relationship by complement-fixation test between Tahyna and viruses of the California encephalitis serogroup (Whitman and Shope)**

Antibody to:	Number of injections	Antigen			
		Tahyna	CE	Melao	TVT
Tahyna	3	16/256 *	8/128	0	0
CE	6	64/512	128/512		
Melao	6	128/256		256/512	
TVT	6	16/128			64/512

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

## Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)  
CNS (M)Lab Methods of Virus Recovery (ALL ISOLATIONS)  
Newborn mice

Cell system (a)	Virus passage history (b)	Evidence of Infection							Growth Without CPE +/- (g)	
		CPE			PLAQUES					
		Day (c)	Extent (d)	Titer TCD50/ml (e)	Day (c)	Size (f)	Titer PFU/ml (e)			
Chick embryo (PC)	Strain 92, P-3 to >P-67	2-3	4+	5.5**	2	0.5-1.0	7.8-8.8**			
HeLa (CL)		4-5	4+	6.5-7.0						
Vero (CL)		3-5	4+	6.8	3	0.4-1.1	7.1			
Aedes aegypti (CL)				No CPE				+ (20)		
Ae albopictus (CL)				No CPE				+ (21)		
Anopheles stephensi (CL)				No CPE				+ (22)		
An gambiae (CL)				No CPE				+ (23)		

CPE and plaques produced in many cell cultures of human, lower primate, lower animal and avian origin (12-19). A few important examples are given below.

\*\* 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
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<p>ISOLATIONS - MAN (blood): 3/13, 2/11 Czechoslovakia; 3/79 USSR; 1/1 (lab.inf.) Norway. RABBIT (blood): 1/16 Czechoslovakia; 2/91 Austria (6-11).</p> <p>ANTIBODY - MAN: 157/948 NT Europe; 6/79 NT Lumbo, Mozambique, Africa; 10/400 NT Ndumu, Natal, South Africa; 156/925 NT Tadjik, USSR (23-25). ANIMALS: <i>Erinaceus roumanicus</i> 7/164 NT Czechoslovakia, Austria; <i>Insectivora</i> (3 species) 0/30 NT Austria; <i>Chiroptera</i> (4 species) 0/144 NT Czechoslovakia, Austria; <i>Vulpes vulpes</i> 1/7 NT Austria; <i>Rodentia</i> (7 species) 2/342 NT Czechoslovakia, Austria; <i>Lepus aeropeus</i> 163/451 NT Czechoslovakia, Austria; 2/3 NT France; <i>Oryctolagus cuniculus</i> 17/181 NT Czechoslovakia, Austria; 21/39 NT France; <i>Sus scrofa</i> 1/3 NT Austria, 3/4 HI France; <i>Capreolus capreolus</i> 4/15 NT Czechoslovakia, Austria; <i>Canis familiaris</i> 3/9 NT Czechoslovakia; <i>Sus scrofa domestic</i> 93/195 NT Czechoslovakia, Austria; <i>Bos taurus</i> 97/895 NT Czechoslovakia, Austria, 27/1,165 HI Portugal; <i>Equus caballus</i> 65/103 NT Czechoslovakia, Austria; 21/61 HI Czechoslovakia, /150 (&gt;50.0%) NT France. BIRDS: 37/513 (56 species) NT Czechoslovakia; <i>Phasianus colchicus</i> 0/44 NT Czechoslovakia; birds 0/400 (39 species) HI Portugal; <i>Sturnus vulgaris</i> 2/32 NT Austria; Birds 0/755 (27 species) HI Austria; <i>Anseriformes</i> 11/144 NT; Birds 0/280 (29 species) HI Czechoslovakia (26-44).</p> <p>ISOLATIONS - MOSQUITOES: <i>Aedes</i> (<i>Aed</i>) <i>caspicus</i> 2; <i>Ae vexans</i> 3; <i>Ae cantans</i> 2; <i>Culiseta annulata</i> 1; <i>Ae cinereus</i> 6; <i>Ae sticticus</i> 1; <i>Culex</i> (<i>Cux</i>) <i>modestus</i> 1; <i>Culiseta annulata</i> larvae 1 Czechoslovakia; <i>Ae caspius</i> and <i>Ae vexans</i> 2, Italy; Culicidae (70% <i>Ae vexans</i>) 54 Fed. Rep. Germany; <i>Ae</i> (<i>Sku</i>) <i>pembaensis</i> 12 Mozambique; <i>Anopheles hyrcanus</i> 1 Azerbaijan, USSR; <i>Ae sticticus</i>, <i>Ae dianteus</i>, Norway; <i>Ae vexans</i>, Yugoslavia (9,24,45-53); <i>Aedes communis</i> 1 Murmansk region, USSR (54).</p>			

**Section VIII - Susceptibility to Experimental Infection (include viremia)**

<b>Experimental host and age</b>	<b>Passage history and strain</b>	<b>Inoculation Route-Dose</b>	<b>Evidence of infection</b>	<b>AST (days)</b>	<b>Titer log10/ml</b>	
Mice (nb)	SMB 11, "92"	ic 0.15	Encephalitis and death	2-5	8.8	
Mice (nb)		ip				
Mice (nb)		sc 0.03	Encephalitis and death	2-5	6.2	
Mice (wn)		ic 0.03	Encephalitis and death	3-6	7.0	
Mice (wn)		ip 0.1	Sporadic encephalitis	5-6	<1.0	

Death produced in suckling mice (ic and ip), weanling mice (ic), suckling white rats (ic and sc), Syrian hamsters (ic), chick embryos (ys). No illness: weanling mice (ip), adult white rats (ic), guinea pigs (ic), rabbits (ic). Viremia produced in suckling pigs, horses, hares, rabbits, hedgehogs (5,10,34).

Viremia and antibody production (NT, CF, HI) after sc inoculation in rhesus, *M. radiata*, *C. aethiops*, and *P. troglodytes*, Tahyna virus infection with illness transmitted to chimpanzees by *Culiseta annulata* (32,33).

Not susceptible: Squirrels, pheasants, frogs, sand lizards, ringed snakes (4,24,26,30).

**Section IX - Experimental Arthropod Infection and Transmission**

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

Tahyna will multiply in or be transmitted to mice by bite of experimentally infected *Culiseta annulata*, *Aedes sticticus*, *Ae vexans* and *Ae communis* (18,24,26,28,32-34).

*Ixodes ricinus* nymphs do not maintain infection after feeding on viremic hamsters (18,26).

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**Section X - Histopathology**

Character of lesions (specify host)

**Neuronal degeneration, edema, glial cell proliferation and perivascular infiltration (7).**

Inclusion Bodies

Intranuclear

Organs/Tissues Affected

**Brain (LV)**

Category of tropism

**Neurotropic**

**Section XI - Human Disease**

In Nature	Residual	Death
<b>Significant</b>		
Subclinical	Overt Disease	
Clinical Manifestations		
<b>Headache (R), prostration, fever, conjunctival inflammation, myalgia, vomiting, stiff neck, CNS signs</b>		
Number of Cases	Category (i.e. febrile illness, etc.)	
<b>Several hundred; seven cases with virus isolation from blood</b>	<b>Febrile illness</b>	

**Section XII - Geographic Distribution**

Known (Virus detected)

**In many countries of Europe, Africa and Asia, USSR**

Suspected (Antibody only detected)

### Section XIII - References

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### Remarks