Virus Name: Absettarov	Abbreviation: ABSV

Status
Arbovirus

Select Agent
No

SALS Level
4

SALS Basis
Placed in Level 4 based on the close antigenic relationship with a known Level 4 agent, Russian spring-summer encephalitis, plus insufficient laboratory experience.

Other Information
Vaccination Recommended

Antigenic Group
B

SECTION I - Full Virus Name and Prototype Number

Prototype Strain Number / Designation
Biphasic meningoencephalitis

Accession Number

Original Date Submitted
2/13/1985

Family
Flaviviridae

Genus
Flavivirus

Information From
A.A. Smorodintsev and V.I. Iljenko

Address
Leningrad, Kirovsky 69/71

Information Footnote
Reviewed by editor

Section II - Original Source

Isolated By (name)
A.A. Smorodintsev, et al. (1)

Isolated at Institute
Leningrad Region, USSR

Host Genus
Man

Species

Host Age/Stage
3 years

Sex
Male

Isolated From	Isolation Details
Whole Blood	

Signs and Symptoms of Illness
Biphasic fever to 39C.; signs of meningitis and encephalitis

Arthropod

Time Held Alive before Inoculation

Collection Method
Venipuncture

Collection Date
6/1/1951

Place Collected (Minimum of City, State, Country)
Priozersk, Leningrad Region, USSR

Latitude
60° N

Longitude
30° E

Macrohabitat
In small village, forested area

Microhabitat

Method of Storage until Inoculated
Inoculated within few minutes of collection

Footnotes

Section III - Method of Isolation

Inoculation Date
6/1/1951

Animal (Details will be in Section 6)
wn mice

Route Inoculated
Intracerebral

Reisolation
Yes

Other Reasons
Numerous isolations of identical strains from other patients with analogous symptoms.

Homologous Antibody Formation by Source Animal
Yes

Test(s) Used
CF, NT

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 **5.5 dex**	Control Titer **7.5 dex**
Lipid Solvent (chloroform)	After Treatment Titer	Control Titer
Lipid Solvent (deoxycholate)	After Treatment Titer **3.24 dex**	Control Titer **7.5 dex**

Other (formalin, radiation)
0.2% formalin inactivates 10% brain suspension in 21 days at 4dC

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

Hemaggiutination	Antigen Source	Erythrocytes (species used)
Yes	**SMB ext. by acetone-ether**	**Goose**
pH Range	pH Optimum	
6.2-7.0	**6.8**	
Temperature Range	Temperature Optimum	
0dC-37dC	**4dC**	

Remarks

Serologic Methods Recommended
HI, CF, NT

Footnotes

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

Antigen composition of Absettarov virus is closely related, if not identical, to tick-borne encephalitis virus and louping ill virus in cross HI, NT and in cross-resistance tests in actively immunized mice. Dr. Clarke's results on the distinct differentiation between the viruses of tick-borne encephalitis group in agar-gel precipitation test [5] , [6] had not been confirmed in our laboratory by N. Gorev by comparison of tick-borne and biphasic meningoencephalitis viruses.

Section VI - Biologic Characteristics

Virus Source (all VERTEBRATE isolates)
Blood (M), cerebro spinal fluid (LV), CNS (LV), lung (LV), liver (LV), spleen (LV), kidney (LV), milk (LV), mammary gland (LV), lymph node (LV)

Lab Methods of Virus Recovery (ALL ISOLATIONS)
Newborn and weanling mice and chick embryos; primary avian cell cultures

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)
Chickembryo (PC)			No CPE;interferon prod.		2-3	Plaques	5-6 **	+
HeLa(CL)	P-3		2+-3+	9.2 **				

** 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
Man	44/131	60-80%	
Cows	0/56	40-80%	
Goats	19/860	40-80%	
Sheep		40-80%	
Horses		30-60%	
Ixodes ricinus and I. persulcatus	105/12,350		

The reservoir and vector of ABS are Ixodes ricinus and I. persulcatus. There are two routes of infection for man: from the bite of an infected tick, or by ingestion of infected goat milk. Characteristically, milk-borne infections affect entire families or population groups, while tick-borne infections are sporadic.

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)		ic 0.01	Death	3-4	8-9
Mice (nb)		ip 0.05	Death	3-4	7-8
Mice (nb)		sc			
Mice (wn)		ic 0.03	Death	4	7-8
Mice (wn)		ip 0.25	Death	5	6-7
rhesus monkey (ad)		ic 0.5	Death	4-6	3-5
rhesus monkey (ad)		ip 3.0	None;survive		
chick embryo(8-10 day)		ys 0.25	Titration in mice	3-4	6
chick embryo(8-10 day)		al.c. 0.25	Titration in mice		5-6
rabbit (ad)		ic 0.3	None; survive		
guinea pig (nb)		ic 0.15	Death	5-8	
guinea pig (ad)		ic 0.2	Fever	6-8	
hamster (ad)		ic 0.05	Death	4-6	
rats (nb)		ic 0.01	Death	4	7
rats (nb)		ic 0.05	None		
sheep (ad)		ic 1.0	Death	6-10	

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

Ixodes ricinus 274854 and I. persulcatus 274854 can transmit the virus transovarially.

If an infected imago feeds on an immune host, the virus is not destroyed.

Section X - Histopathology

Character of lesions (specify host)
In mice and monkeys the virus produces diffuse degenerative changes in nerve cells, vascular lymphocytic infiltration and damage to Purkinje cells.

Inclusion Bodies

Intranuclear
Lower Vertabrates

Organs/Tissues Affected
Brain (LV), spinal cord (LV), spleen (LV), marrow (LV)

Category of tropism
Neurotropic

Section XI - Human Disease

In Nature
Significant

Residual

Death

Subclinical

Overt Disease
Significant

Clinical Manifestations
Fever (S), headache (S), prostration (S), conjunctival inflammation (S), stiff neck (S),myalgia (S), CNS signs (including encephalitis) (R), respiratory involvement (R), leukopenia (S), CNS pleocytosis (R), vomiting (R); pronounced headache and biphasic fever.

Number of Cases
Many

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

Section XII - Geographic Distribution

Known (Virus detected)
Western part ofUSSR, Sweden, Finland, Poland, Czechoslovakia, Hungary, Austria, Bulgaria

Suspected (Antibody only detected)

Section XIII - References

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Remarks

Editor's note: While Dr. Smorodintsev agrees that the present serological methods cannot distinguish between the Absettarov strain and strains previously isolated in Czechoslovakia and Byelorussia, he requests that the Absettarov strain be registered in the Catalogue because of the distinctive and milder symptomatology it produces in man and its distinctive experimental pathogenesis in lower animals, particularly monkeys. For notes on antigenically related strains see registration of Czechoslovak tick-borne encephalitis (Hanzalova).