

Virus Name: Chandipura

Abbreviation: CHPV

Status: Arbovirus

SALS Level: 2

Antigenic Group: Vesicular Stomatitis

Taxonomic status: *Vesicuvirus*

Other Information: None.

Select Agent:

SALS Basis: S

HEPA Filtration:

Section I - Full Virus Name and Prototype Number

Full Virus Name:

Chandipura

Prototype Number:

653514

Information from: The Virus Research Centre, Poona, India

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Date: 6/5/1984

Address: Yale Arbovirus Research Unit

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Revised by R.B.Tesh

Section II - Original Source

Isolated by: Staff, Virus Research Centre

at: Poona, India (1)

Genus and species: Man

Sentinel X

Age/Stage: Adult

Sex: F

Isolated From	Isolation detail
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Signs and symptoms of illness: Chills, fever, myalgia, arthralgia, vomiting and weakness (1)

Arthropod engorged depleted **gravid**

Time held alive before inoculation:

Collection date: 6/10/1965

Method: Venipuncture

Place collected: Chandipura, Nagpur City, Maharashtra, India

Latitude: 21° 10' " N

Longitude: 79° 12' " E

Macrohabitat: Rural community

Microhabitat:

Method of storage until inoculated: At -50dC and on dry ice for last 12 hours

Footnotes:

Section III - Method of Isolation and Validity

Inoculation Date: 6/12/1965

Animal: nb mice, BS-C-1 (cells)

Embryonated egg:

Tissue Culture: X

(Details in Section VI - Biologic Char.)

Route inoculated: Intracerebral

Reisolation: Yes

Other reasons:

Homologous antibody formation by source animal (See Section II): Yes

Test used: HI

CF

NT X

Footnotes:

Section IV - Virus Properties

Physicochemical:

RNA: X DNA: Single Strand: X Double Strand:
Pieces: 1 Infectivity: No Sedimentation coefficient(s): /strong>38-45
Percentage wt. of virion protein protein 60-70% , lipid lipid 20-25% carbohydrate 3-13%, RNA: 0.7-5.0%
Virion polypeptides:
Number: 5 Details: M (MW 150-200 x 10³), G (64 x 10³), N (54 x 10³), M (27 x 10³), NS (29-45 x 10³) (2,3)
Non-virion polypeptides:
Number: 0 Details:
Virion density:
1.18-1.20 in sucrose Sedimentation coefficient: 625 (2)
Nucleocapsid density 1.32 in CsCl Sedimentation coefficient: 140

Stability of infectivity (effects) pH Unstable at pH 3.0; stable in range pH 5-10

Lipid solvent:

(ether)	After treatment titer	Control titer
(chloroform)	After treatment titer 4.5 dex	Control titer >10.5 dex (1)
Detergent: (deoxycholate) 1:200	After treatment titer <4.0 dex	Control titer >9.0 dex (1)

Other (formalin, radiation): Inactivated by ultraviolet light and x-radiation

Virion morphology:

Shape	Bullet-shaped (3)	Dimensions	180 x 75 nm
Mean (nm)	range (nm)	how measured	Electron microscopy

Surface projections, envelope Surf. proj. 6-10 nm; bilayer lipid membrane (2)
Nucleocapsid dimensions, symmetry Extended 3.5 nm; helical 30-35 turns; 49nm outer,

Morphogenesis:

Site of constituent formation in cell Cytoplasm (2)
Site of virion assembly Buds from plasma membrane
Inclusion bodies Not usually
Other

Hemagglutination:

Hemagglutination	No	Antigen source	SMB ext. by sucrose-acetone + prot.		
Erythrocytes	Goose**	pH range	6.0-6.8	pH optimum	
Temperature optimum	24-37dC	range			

Remarks Sucrose and acetone preparations with varying concentrations of protamine sulfate tried unsuccessfully (1) ** Human O erythrocytes also tried.
Serologic methods recommended CF, NT
Footnotes: Sucrose and acetone preparations with varying concentrations of protamine sulfate tried unsuccessfully (1) ** Human O erythrocytes also tried.

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

CF Tests [5]

Hyperimmune mouse sera or ascitic fluid													
Antigens	VSNJ	VSI	COC	PIRY	CHP	FLA	HP	Mokola	Rabies	LB	MEB	KC	KLA
VSNJ	256/512 ^a	0	0	0	0	0	0	0	0	0	0	0	0
VSI	0	256/512	32/128	0	0	0	0	0	0	0	0	0	0
COC	0	32/512	256/512	0	0	0	0	0	0	0	0	0	0
PIRY	0	0	0	128/32	8/4	0	0	0	0	0	0	0	0
CHP	0	0	0	0	128/64	0	0	0	0	0	0	0	0
FLA	0	0	0	0	0	64/16	32/4	0	0	0	0	0	0
HP	0	0	0	0	0	32/16	256/64	0	0	0	0	0	0
Mokola	0	0	0	0	0	0	0	256/512	32/32	0	0	0	0
Rabies	0	0	0	0	0	0	0	32/128	1024/512	0	0	0	0
LB	0	0	0	0	0	0	0	64/128	64/128	8/128	0	0	0
MEB	0	0	0	0	0	0	0	0	0	0	64/64	0	0
KC	0	0	0	0	0	0	0	0	0	0	0	256/512	0
KLA	0	0	0	0	0	0	0	0	0	0	0	0	256/64
Normal	0	0	0	0	0	0	0	0	0	0	0	0	0

VSNJ (VS-New Jersey), VSI (VS-Indiana), COC (Cocal), CHP (Chandipura), FLA (Flanders), HP (Hart Park), LB (Lagos bat), MEB (Mt. Elgon bat), KC (Kern Canyon), KLA (Klamath).

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

Virus	NT [5]						Plaque NT [6]						
	Titer-dex	Virus					Immune Serum	Virus					
	LD50	VSI	COC	VSNJ	PIRY	CHP		VSNJ	VSI	COC	PIRY	CHP	ISF
VSI	7.1	6.2 ^b	4.2	1.9	0	2.6	VSNJ	10240 ^c	<10	<10	<10	<10	<10
COC	7.7	4.2	>7.0	2.7	1.7	1.8	VSI	<10	327680	320	<10	<10	<10
VSNJ	5.5	2.2	0	>5.0	0	0	COC	<10	160	5120	<10	<10	<10
							VSA	<10	20	20	<10	<10	<10
PIRY	7.9	2.3	2.6	2.5	5.7	3.4	PIRY	<10	<10	<10	163840	80	<10
CHP	7.3	2.5	2.7	0	4.6	>5.7	CHP	<10	<10	<10	<10	10240	<10
							ISF	<10	<10	40	<10	<10	163840

^b LNI in dex; 0 = 1.5 or less

^c Reciprocal of highest serum dilution producing >95% plaque inhibition.

See References [5] and [7] for additional PRNT results.

Section VI - Biologic Characteristics

Virus source (all VERTEBRATE isolates): Blood (M), liver (LV)

Lab Methods of Virus Recovery (ALL ISOLATIONS): Newborn mice and BS-C-1 cell cultures (1)

Susceptibility of Cell Culture Systems:

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)		
BS-C-1 (CL)	Few	1	4+	>11.6* (1)					
Monkey kidney(PC)	Few	1	4+	>11.6 (1)			11.2*		
Chick embryo (PC)	Few	1	4+	10.5 (1)					
Vero (CL)		1	4+		2	2-3 mm	8.0		
PS (CL)	SM22, Vero 2	1	4+		1	0.3 mm	7.5 (8)		

Chandipura virus also grows in *Aedes albopictus*, *Aedes aegypti*, *Aedes W-albus*, *Anopheles stephensi* and *Toxorhynchites amboinensis* cell lines without producing CPE (9,10).

* 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 (blood)	2/58	155/203 NT	Maharashtra State, India (1)
Man		293/972 NT	Variouz other states, India (1)
Phlebotomus sp.	1/2,070 (21 pools)		Aurangabad, Maharashtra State, India
Camels		1/50 NT	India (1)
Horses		13/71 NT	
Donkeys		13/40 NT	
Cows		11/18 NT	
Buffalo		2/8 NT	
Sheep		4/14 NT	
Goats		6/19 NT	
Rhesus monkeys		7/43 NT	
Atelerix spiculus (hedgehog)	1		Kware, Nigeria (7)
Atelerix albiventris	1		

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
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Mice (nb)	Prototype (1)	ic 0.02	Death	1-3	>10
Mice (nb)		ip 0.02	Death	1-3	>10
Mice (nb)		sc	Death	1-3	
Mice (wn)		ic 0.03	Death	1-6	10
Mice (wn)		ip 0.03	Antibody and survival		

NOTE: Newborn mice develop high level of viremia after inoculation; adult mice have low-titered or no detectable viremia during infection (1).

