

A New Leptospiral Serotype in the *Icterohaemorrhagiae* Serogroup from Ceylon

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SUMMARY Leptospire isolated from the blood of a human in Ceylon in 1966 have proved to be a new serotype in the *icterohaemorrhagiae* serogroup. The name *gem* has been proposed for the new serotype of the strain called LT-16-67 ("simon").

Leptospira icterohaemorrhagiae, the first serotype isolated in Ceylon, was obtained from a human and soon after from a sewer rat (Nityananda, 1962). Upto 1965, relatively few leptospiral serotypes had been isolated in Ceylon. Since then 16 other serotypes have been isolated, belonging to the following serogroups; *icterohaemorrhagiae*, *canicola*, *autumnalis*, *javanica*, *hebdomadis*, *grippytyphosa* and *pomona*. Serologic evidence has indicated that infection with strains related to serotypes *bataviae*, *borincana*, *bratislava*, *djasiman*, *sentot*, *tarasovi* and *wolffi* may exist, but these serotypes have not been isolated yet (Nityananda and Harvey, 1971).

An unidentifiable isolate obtained from the blood of a human in Ceylon in 1966 was sent to the Center for Disease Control for identification. The number LT-16-67 was given to this isolate at CDC. Antigen prepared from this culture was tested by the microscopic agglutination test with a battery of 12 leptospiral antisera, Table 1.

The results of this test indicate a close serologic relationship with *icterohaemorrhagiae* and *canicola* serogroups. The culture was then tested with *icterohaemorrhagiae* and *canicola* serotypes and was shown to have a close relationship with the members of the *icterohaemorrhagiae* serogroup, Table 2.

Results of subsequent agglutinin absorption studies with antisera of the members of the *icterohaemorrhagiae* and *canicola* serogroups having a titer of greater than 1 : 400, Table 3, show that this strain, LT-16-67 (simon) is a new serotype in the *icterohaemorrhagiae* serogroup. The name *gem* is proposed for this new serotype, for which "simon" is the name of the strain.

TABLE 1

Cross agglutination reactions of leptospiral strain LT 16-67 showing relation with members of screening antisera.

Serogroup	Antiserum		Titer against antigen	
	Serotype	Strain	Homologus	LT-16-67
Ballum	ballum	Mus 127	6,400	—
Canicola	canicola	Ruebuch	25,600	400
Icterohaemorrhagic	icteroides	RGA	25,600	6,400
Bataviae	bataviae	Van Tienen	25,600	—
Grippotyphosa	grippotyphosa	Andaman	25,600	—
Pyrogenes	pyrogenes	Salinem	25,600	—
Autumnalis	autumnalis	Akyami	25,600	200
Pomona	pomona	Pomona	102,400	50
Hebdomadis	wolfii	3705	102,400	—
Hebdomadis	georgia	LT 117	25,600	—
Australis	australis	Ballico	25,600	—
Tarassovi	tarassovi	Perepelicin	25,600	—

(—) Negative at 1 : 100 final dilution.

TABLE 2

Cross agglutination reactions of leptospiral strain 16-67 with members of *canicola* and *ictero* serogroups

<i>Antiserum</i>		<i>Titre against antigen</i>		<i>LT 16-67 Serum against antigens in Column I</i>
<i>Canicola Serogroup Serotype</i>	<i>Strain</i>	<i>Homologus</i>	<i>LT 16-67</i>	
canicola	Hond Utrecht	12,800	50	400
galtoni	LT 1014	25,600	1,600	1,600
bafani	Bafani	12,800	200	400
kamituga	Kamituga	6,400	100	3,200
jonsis	Jones	6,400	100	100
summeri	Summer	6,400	100	400
broomi	Patane	12,800	50	400
bindjei	Bindjei	6,400	100	—
schueffneri	Schueffneri	25,600	—	100
benjamin	Benjamin	12,800	800	6,400
malaya	H 6	12,800	12,800	6,400
<i>Ictero Serogroup Serotype</i>				
icteroides	R G A	25,600	12,800	12,800
mankarso	Mankarso	25,600	6,400	6,400
naam	Naam	12,800	6,400	1,600
sarmin	Sarmin	12,800	1,600	800
birkini	Birkin	25,600	6,400	1,600
smithi	Smith	12,800	3,200	1,600
ndambari	Ndambari	25,600	12,800	25,600
ndahambukuje	Ndahambukuje	6,400	12,800	1,600
mwogolo	Mwogolo	51,200	6,400	25,600
dakota	Grand River	51,200	12,800	12,800
weaveri	CZ 390 U	25,600	200	—
mionymusk	LT 75-68	25,600	6,400	800
gem	LT 16-67	102,400	—	102,400

TABLE 3

Results of cross agglutination absorption tests on leptospiral strain LT 16-67 with members of the *ictero* and *canicola* serogroups

Antiserum		Reciprocal of titer against antigen			
<i>ictero</i> Serogroup Serotype	Absorbed with	Homologus		Absorbing Strain	
		Before	After	Before	After
naam, Naam	16-67	25,600	12,800	12,800	—
naam Dakota, G.R.	16-67	6,400	6,400	25,600	—
ndahambukuje, Ndaha	16-67	12,800	12,800	6,400	—
mwogolo, Mwogolo	16-67	6,400	1,600	6,400	100
mankarso, Mankarso	16-67	6,400	12,800	6,400	200
icteroides, R G A	16-67	25,600	51,200	1,600	—
birkini, Birkin	16-67	6,400	6,400	12,800	200
smithi, Smith	16-67	12,800	6,400	12,800	—
ndambari, Ndambari	16-67	12,800	12,800	12,800	200
sarmin, Sarmin	16-67	12,800	6,400	1,600	—
mionymusk, LT 75-68	16-67	12,800	12,800	6,400	—
<i>Canicola</i> Serogroup Serotype					
galtoni, LT 1014	16-67	51,200	1,600	800	—
benjamin, Benjamin	16-67	6,400	3,200	400	—
malaya, H 6	16-67	3,200	12,800	6,400	—

TABLE 3 (Continuation)

Antiserum		Reciprocal of titer against antigen			
Serotype	Absorbed with	Homologus		Absorbing Strain	
		Before	After	Before	After
		LT 16-67	birkini, Birkin	25,600	6,400
LT 16-67	smithi, Smith	25,600	6,400	6,400	100
LT 16-67	ndambari, Ndambari	25,600	25,600	6,400	400
LT 16-67	sarmin, Sarmin	25,600	6,400	100	—
LT 16-67	mionymusk, LT 75-68	12,800	12,800	800	—
LT 16-67	galtoni, LT 1014	6,400	6,400	1,600	—
LT 16-67	benjamin, Benjamin	12,800	12,800	400	—
LT 16-67	malaya, H 6	12,800	6,400	12,800	—
LT 16-67	kamituga, Kamituga	51,200	102,400	3,200	—

REFERENCES

- NITYANANDA, K. (1962). Isolation of leptospira in Ceylon. *Ceylon Medical Journal*, 7, 95-96.
- NITYANANDA, K. & HARVEY, T. (1971). Leptospirosis in Ceylon — Epidemiological and Laboratory Studies. *Ceylon Journal of Medical Science*, 20, 5-14.

