

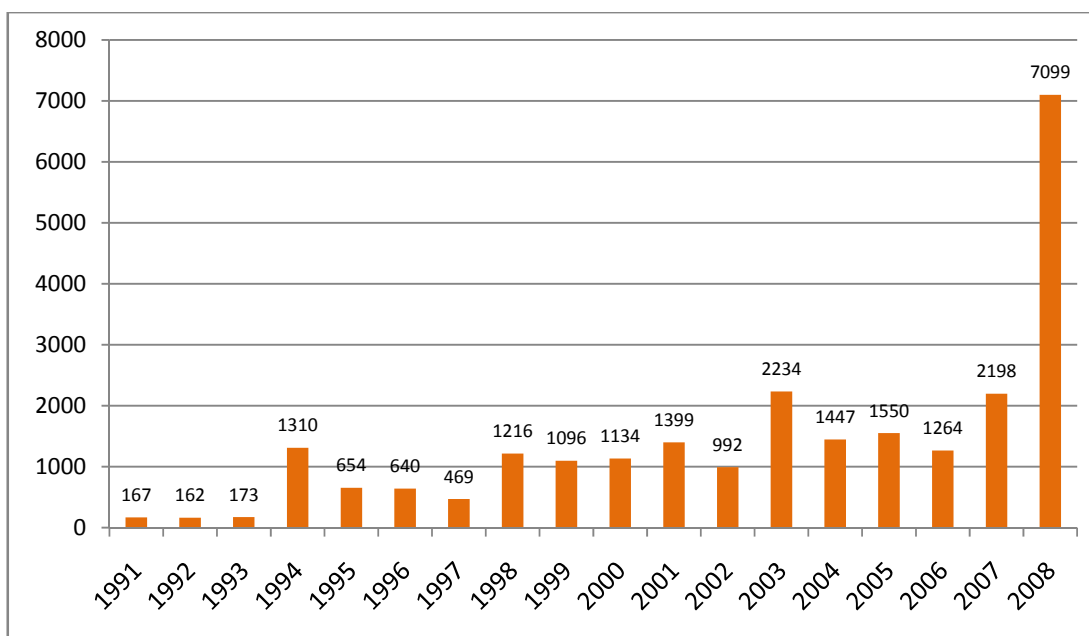
AN INTERIM ANALYSIS OF LEPTOSPIROSIS OUTBREAK IN SRI LANKA – 2008

HISTORY

Human leptospirosis (Weil's disease) was first described in Sri Lanka in 1953¹. In early days, the majority of cases were reported from Ratnapura (Sabaragamuwa Province), then Ragama, Colombo and Kalutara (Western Province), Matara (Southern Province), to a lesser degree from Kandy and Matale (Central Province) and Anuradhapura (North Central Province). It is recorded that reporting varied from time to time and place to place depending on the clinician working in that place². In 1959 the first leptospira *L. icterohaemorrhagiae* was isolated from the blood of a patient in Colombo and soon after from the kidney of a sewer rat trapped in the vicinity of that patient's home².

CURRENT SITUATION

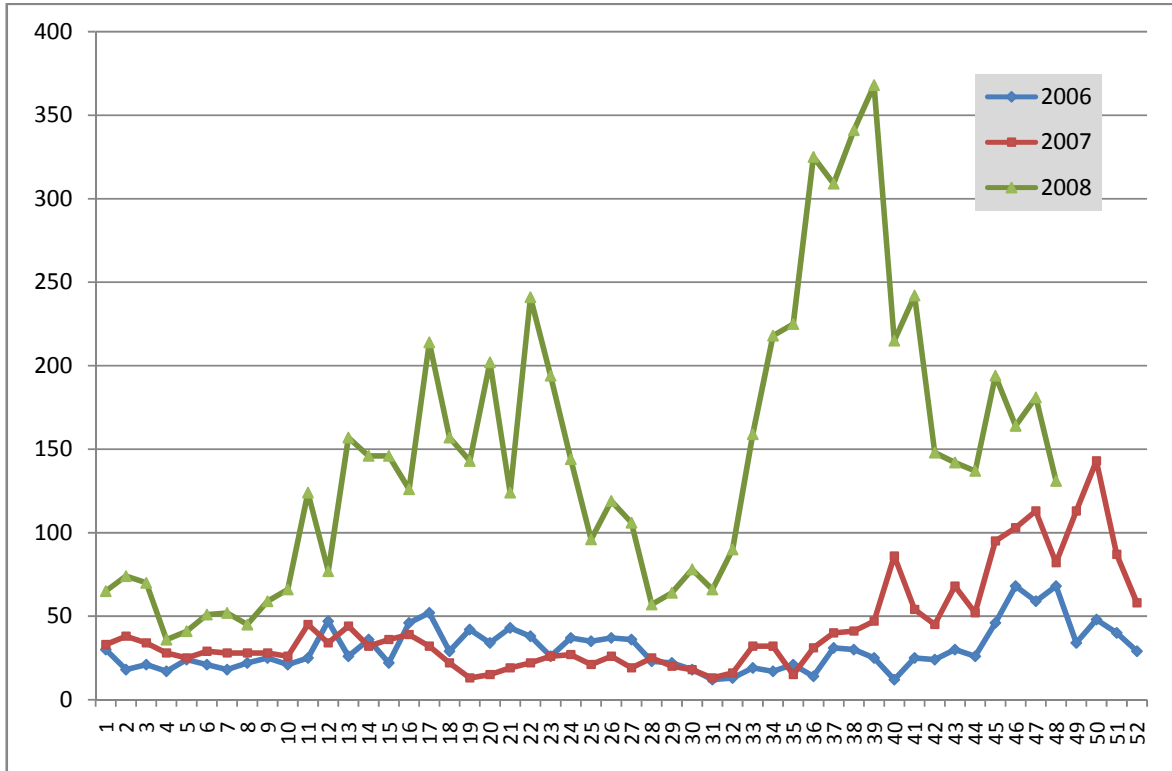
Over the past decade or more leptospirosis remains endemic in Sri Lanka with an outbreak situation once in every four to five years (Figure 1). Beginning from the latter part of the year 2007, Sri Lanka is experiencing the largest ever recorded outbreak of leptospirosis. When compared with the year 2006, the increase in the number of cases reported in 2008 has surpassed 400% already. Based on the notification of suspected cases, the incidence of leptospirosis in Sri Lanka in 2008 is 35.7 per 100,000 population.



Number of cases in 2008 is up to 17th December 2008

Figure 1: Number of suspected cases of leptospirosis notified 1991- 2008

The peak of the current outbreak with notification of 368 cases was in the week 39 (Week ending 26th September 2008). At present, the outbreak is in the declining phase and the total number notified up to 17th December 2008 was 7099 patients. There were 204 deaths with a case fatality rate of 2.9%. In 2007, the case fatality rate was 1.5%.



Data for year 2008 is up to Week 49 (Week ending 05th December 2008)

Figure 2: Leptospirosis case notification by week 2006 – 2008.

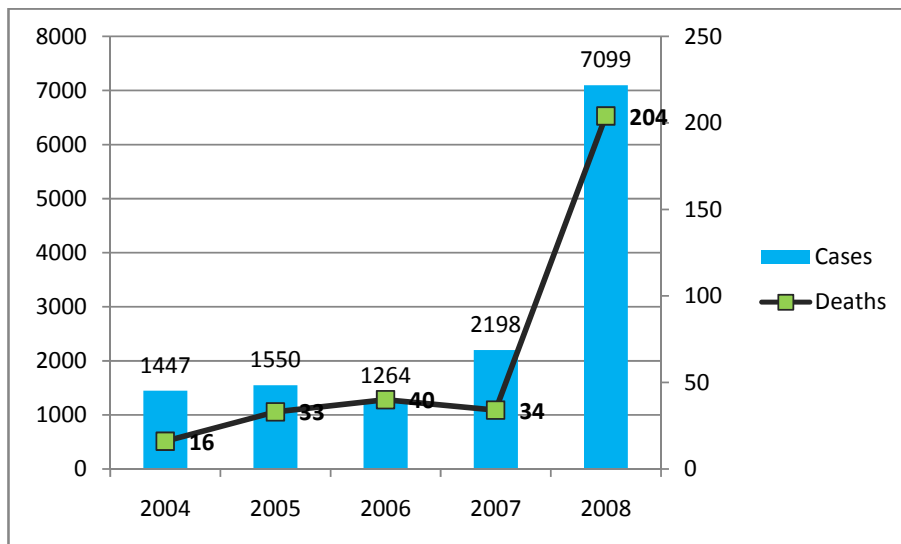
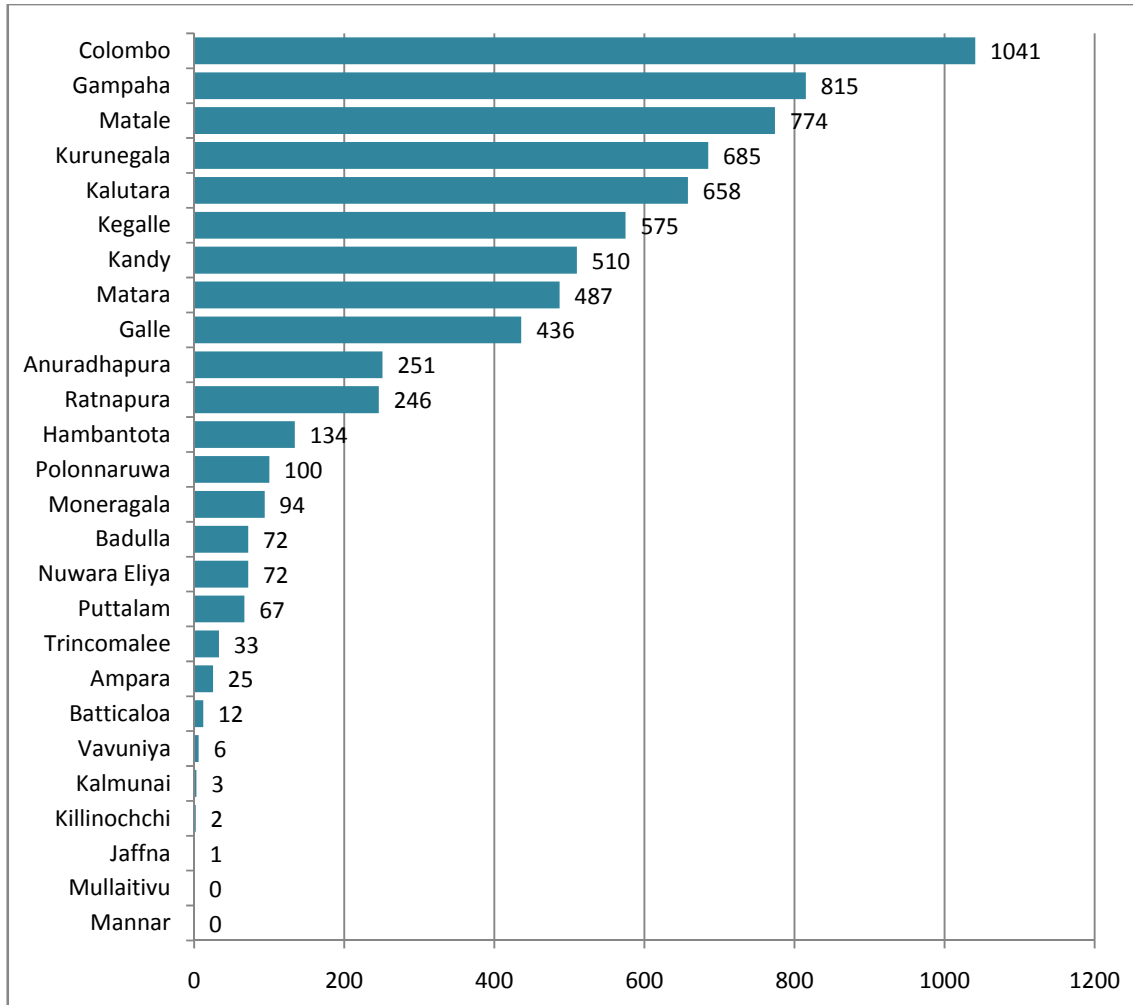


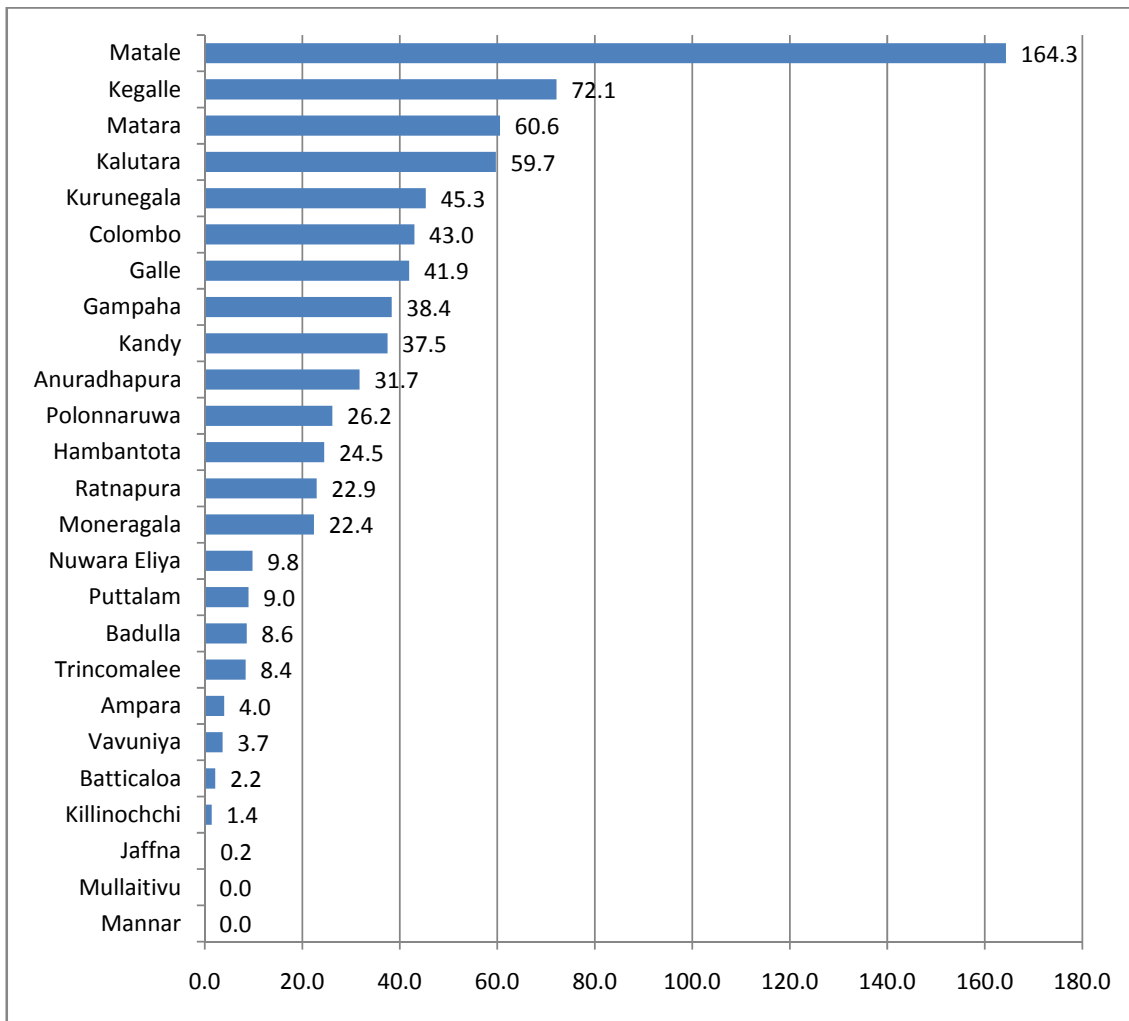
Figure 3: Cases and deaths due to leptospirosis in Sri Lanka 2004 - 2008

Worst affected districts with the largest case load are Colombo, Gampaha and Kalutara in the Western Province, Matale and Kandy in the Central Province, Kurunegala in the North Western Province, Kegalle in the Sabaragamuwa Province, and Matara and Galle in the Southern Province (Figure 4). The highest incidence is in the Matale District with 150.5 per 100,000 population (Figure 5). The next highest incidence of 66.5 per 100,000 population has been reported from the Kegalle district.



Based on notified suspected cases up to 17th December 2008

Figure 4: Distribution of suspected cases of leptospirosis in Sri Lanka 2008



Based on notified suspected cases up to 17th December 2008

Figure 5: Incidence rates of leptospirosis in Sri Lanka 2008

SPECIAL INVESTIGATIONS

By 11th December 2008, a total of 1957 completed Special Investigation Forms have been received by the Epidemiology Unit. This include 261 (13%) patients treated at Base Hospital Horana, 230 (13%) at District General Hospital Matale, 227 at Teaching Hospital Colombo South, 192 at General Hospital Kegalle, 138 (7%) at Base Hospital Homagama, 160 (8%) at Teaching Hospital Kurunegala and 115 (6%) at Teaching Hospital Kalutara.

The mean age of patients is 40 years (SD 14.7) with 81% were males.

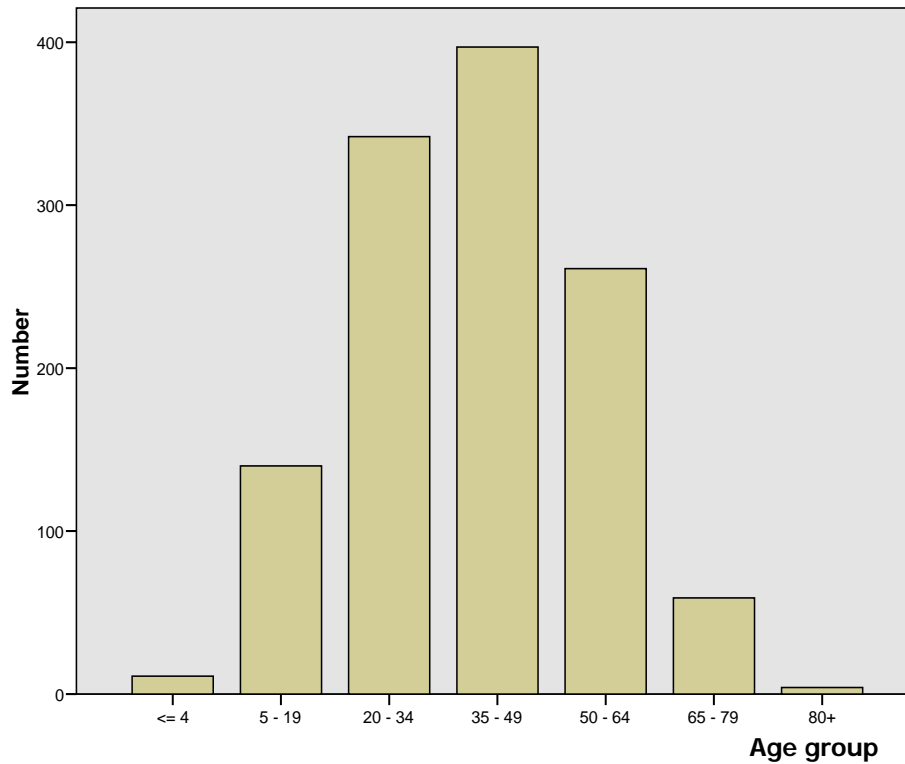


Figure 6: Age distribution of confirmed leptospirosis patients in Sri Lanka 2008

The commonest symptoms were acute fever, myalgia, headache, conjunctival suffusion and prostration. Table 1 shows frequency distribution of symptoms and signs associated with leptospirosis.

Table 1: Frequency distribution of symptoms and signs associated with leptospirosis in Sri Lanka 2008

Symptom/ Sign	Number	Percentage
Acute fever	1930	98.6
Myalgia	1781	91.0
Headache	1770	90.4
Conjunctival suffusion	1406	71.8
Prostration	722	36.9
Anuria/Oliguria	654	33.4
Jaundice	474	24.2
Proteinuria	198	10.1
Cardiac failure/ arrhythmias	99	5.1
Haemorrhagic manifestations	98	5.0
Meningeal irritation	61	3.1
Skin rash	61	3.1

The majority (61%) has been exposed to paddy fields. Another 24% provided a history of exposure to marshy or muddy lands while exposure to animal husbandry or veterinary environment is rare (Table 2).

Table 2: Exposure history to risk environment by confirmed leptospirosis patients in Sri Lanka 2008

Risk environment	Number	Percentage
Paddy fields	1192	60.9
Marshy/ muddy lands	464	23.7
Other water related sources	227	11.6
Other agricultural lands	40	2.0
Animal husbandry	8	0.4

Based on the available data, 931 (47.6%) were not on prophylaxis while only 26 (1.3%) were on prophylactic treatments at the time of getting the infection. Prophylaxis history of 1000 (51.1%) patients was not available.

Out of the total of 1957, results of Microscopic Agglutination Test conducted at Medical Research Institute, were available for 144 patients. 71 (49.3%) patients were positive (titre level ≥ 800) and 30 (20.8%) were equivocal (titre level <800) while 43 (29.9%) showed negative results.

LABORATORY DIAGNOSIS OF LEPTOSPIROSIS

Up to the end of November, Medical Research Institute has performed more than 4000 Microscopic Agglutination Tests (MAT) with samples received from all over the country. A preliminary analysis of 1414 tests revealed that 37% were positive while 24% and 39% were equivocal and negative respectively (Table 3). Among positives, 78% were males. 13% were females while the gender of 9% was not available. The mean age of positive patients was 40.2 years (SD 14.4).

Table 3: Leptospirosis antibody titre levels detected at MRI in 2008

Titer level	Number	Percentage
100	159	11.2
200	96	6.8
400	81	5.7
800	84	5.9
1600	125	8.8
3200	321	22.7
3600	1	0.1
0	547	38.7
Total	1414	100.0

Districts from where samples were received by the MRI are given in Table 4. Since the district of residence could vary from where the hospital is situated these figures do not provide the geographical distribution of disease incidence.

Table 4: District distribution of blood samples received by MRI in 2008

District	Titre Level			Total N (%)
	Positive [§] N (%)	Equivocal [§] N (%)	Negative [§] N (%)	
Colombo	120 (38.7)	68 (21.9)	122 (39.4)	310 (100.0)
Gampaha	63 (37.5)	41 (24.4)	64 (38.1)	168 (100.0)
Kalutara	10 (32.3)	11 (35.5)	10 (32.3)	31 (100.0)
Kandy	107 (49.3)	47 (21.7)	63 (29.0)	217 (100.0)
Matale	93 (34.8)	80 (30.0)	94 (35.2)	267 (100.0)
Kurunegala	30 (51.7)	12 (20.7)	16 (27.6)	58 (100.0)
Galle	20 (42.6)	15 (31.9)	12 (25.5)	47 (100.0)
Matara	11 (33.3)	6 (18.2)	16 (48.5)	33 (100.0)
Kegalle	18 (54.5)	5 (15.2)	10 (30.3)	33 (100.0)
Anuradhapura	18 (15.1)	23 (19.3)	78 (65.5)	119 (100.0)
Moneragala	11 (52.4)	6 (28.6)	4 (19.0)	21 (100.0)
Nuwara Eliya	--	--	2 (100.0)	2 (100.0)
Hambantota	1 (33.3)	1 (33.3)	1 (33.3)	3 (100.0)
Vavuniya	2 (100.0)	--	--	2 (100.0)
Batticaloa	1 (100.0)	--	--	1 (100.0)
Ampara	3 (37.5)	--	5 (62.5)	8 (100.0)
Trincomalee	2 (15.4)	6 (46.2)	5 (38.5)	13 (100.0)
Puttalam	3 (25.0)	2 (16.7)	7 (58.3)	12 (100.0)

Polonnaruwa	5 (71.4)	1 (14.3)	1 (14.3)	7 (100.0)
Badulla	5 (45.5)	1 (09.1)	5 (45.5)	11 (100.0)
Kalmunai	--	2 (20.0)	8 (80.0)	10 (100.0)
Total	523 (38.1)	327 (23.8)	523 (38.1)	1373 (100.0)

§ MAT titre level: Positive = ≥ 800 ; Equivocal = < 800 , Negative = 0

ISOLATION OF SEROVARS

Isolation of serovars in 9 samples was carried out at the Veterinary Research Institute, Peradeniya. Results are as follows:

Table 5: Leptospirosis serovars isolated from patients in Sri Lanka in 2008

Patient No	Serovar	Titre Level
01	<i>pyrogenes</i>	400
	<i>australis</i>	400
02	<i>australis</i>	1600
03	<i>australis</i>	100
04	<i>weerasinghe</i>	400
	<i>pyrogenes</i>	100
	<i>australis</i>	200
	<i>gem</i>	200
05	<i>canicola</i>	800
	<i>pyrogenes</i>	200
	<i>gem</i>	800
06	Not detected	
07	<i>pyrogenes</i>	100
08	<i>pyrogenes</i>	100
09	Not detected	

REFERENCE

1. Administrative Report of the Director of Health Services for the Year 1953. Ceylon Government Press.
2. Nityananda K. 1970. Leptospirosis in Ceylon – Epidemiological & Laboratory Investigation. Report No FE-381-4 (Annual Report) US Army Research and Development Group Far East, San Francisco, US.

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