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THREE NEW SALMONELLA TYPES (*S. ITURI*, *S. KASENYI*  
AND *S. NIAREMBE*) FROM THE BELGIAN CONGO  
(OCCURRENCE OF SALMONELLA TYPES IN DUCKS)

By

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(Received for publication January 2nd, 1953)

1. SALMONELLA ITURI

9 strains of a new Salmonella type, *S. ituri*, were isolated from the feces of 2 apparently normal, adult ducks in Zega and of 4 apparently normal, adult ducks in Kasenyi (Lac Albert).

The biochemical behaviour of this new type is as follows: No fermentation of adonitol, inositol, lactose, salicin, and sucrose. No production of indole, no liquefaction of gelatin (60 days 20°C.), and no decomposition of urea. Rapid fermentation of arabinose, dulcitol, glucose (with gas), maltose, mannitol (with gas), rhamnose, sorbitol, trehalose, and xylose. Positive reaction in *Stern's* glycerolfuchsin broth, and formation of H<sub>2</sub>S. Positive reaction in liquid ammonium media containing glucose or sodium citrate. Positive reaction in d-tartrate, mucate, and sodium citrate after 1 day, in i-tartrate after 2-4 days. Nitrates were reduced, the Voges-Proskauer reaction was negative, and the methyl-red reaction positive.

Serologically the type has the formula I, IV, XII: z<sub>10</sub>: 1,5. Cross-absorptions showed that the O antigen is identical with the O antigen of *S. typhi murium* var. *copenhagen*. The H antigen z<sub>10</sub> is identical with the H antigen z<sub>10</sub> of *S. haifa* = I, IV, V, XII: z<sub>10</sub>: 1,2. The H antigen 1,5 is not identical with the H antigen 1,5 of *S. thompson*. The H serum of *S. thompson* phase 2 was absorbed completely by *S. ituri* phase 2, but the H serum of *S. ituri* phase 2 was not absorbed completely by *S. thompson* phase 2: H agglutinins for *S. ituri* phase 2 and *S. panama* phase 2 remained in the serum. By combined absorption with *S. thompson* phase 2 + *S. panama* phase 2 the H serum of *S. ituri* phase 2 was absorbed completely.

## 2. SALMONELLA KASENYI

3 strains of a new Salmonella type, *S. kasenyi*, were isolated from the feces of 2 apparently normal, adult ducks in Kasenyi (Lac Albert).

The biochemical behaviour of this new type is the same as that of *S. ituri*.

Serologically the type has the formula XXXVIII: e,h: 1,5. Cross-absorptions showed that the O antigen is identical with the O antigen of *S. inverness*. The H antigen of phase 1 (e,h) is identical with the H antigen of *S. eastbourne*, phase 1. The H antigen of phase 2 (1,5) is not identical with the H antigen of *S. thompson*, phase 2.

## 3. SALMONELLA NIAREMBE

The culture (2092) was isolated from the feces of a 6 months old European child with enteritis, in Niarembe (Ituri).

The biochemical behaviour of this new type is the same as that of *S. ituri* and *S. kasenyi*, with the exception that i-tartrate was not fermented after 14 days.

Serologically the type has the formula XLIV: a: l,w. The O antigen is a new one and not related to the known O antigens of the Salmonella group. The H antigen of phase 1 (a) is not identical with the H antigen of *S. paratyphi* A, it is related to the H antigen of *S. chittagong*, phase 2 (z<sub>35</sub>). The H antigen of phase 2 (l,w) is identical with the H antigen of *S. dar es salaam*, phase 1.

4. OCCURRENCE OF SALMONELLA TYPES IN  
DUCKS AND DUCKLINGS

With regard to the epidemiology of Salmonella infections in the Belgian Congo we like to stress that the following 16 Salmonella types were isolated from the feces of apparently normal, adult ducks or of sick ducklings. All these cultures were isolated in the region of Ituri, with the exception of *S. irumu*, *S. makiso* and *S. typhi murium* which were isolated in Ruanda-Urundi (Usumbura).

1. <i>S. adelaide</i> .....	=	XXXV	f, g	-
2. <i>S. cairina</i> .....	=	III, X	z <sub>35</sub>	z <sub>6</sub>
3. <i>S. elisabethville</i> ...	=	III, X	r	1,7
4. <i>S. emek</i> .....	=	(VIII), XX	g, m, s	-
5. <i>S. heidelberg</i> .....	=	IV, V, XII	r	1,2
6. <i>S. irumu</i> .....	=	VI, VII	l, v	1,5
7. <i>S. ituri</i> .....	=	I, IV, XII	z <sub>10</sub>	1,5
8. <i>S. kasenyi</i> .....	=	XXXVIII	e, h	1,5
9. <i>S. makiso</i> .....	=	VI, VII	l, z <sub>28</sub>	z <sub>6</sub>
10. <i>S. mikawasima</i> ...	=	VI, VII	y	e, n, z <sub>15</sub>
11. <i>S. simi</i> .....	=	III, X	r	e, n, z <sub>15</sub>
12. <i>S. stanleyville</i> .....	=	IV, V, XII	z <sub>4</sub> , z <sub>23</sub>	1,2
13. <i>S. tinda</i> .....	=	I, IV, XII, XXVII	a	e, n, z <sub>15</sub>
14. <i>S. typhi murium</i> ..	=	IV, V, XII	i	1,2
15. <i>S. zanzibar</i> .....	=	III, X	k	1,5
16. <i>S. zega</i> .....	=	IX, XII	d	z <sub>6</sub>

## SUMMARY

The authors describe three new *Salmonella* types from the Belgian Congo:

*Salmonella ituri* = I, IV, XII: z<sub>10</sub>: 1,5.

*Salmonella kasenyi* = XXXVIII: e,h: 1,5.

Both these types were isolated from the feces of apparently normal, adult ducks.

*Salmonella niarembe* = XLIV: a: l,w

isolated from the feces of a 6 months old European child with enteritis.

The occurrence of 16 different *Salmonella* types in apparently normal, adult ducks or in sick ducklings is stressed.