A NEW SALMONELLA SEROTYPE: S. FLINT

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SUMMARY. A new Salmonella serotype (50:z4, z23:-) was described and the designation S. flint was assigned to it. Two of the three cultures of S. flint reported upon were isolated from young children who were ill with gastroenteritis and the third was recovered from a bird snake.

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The Salmonella serotype to be described was represented by three cultures. Two of these were recovered from the stools of hospitalized male siblings, aged 10 and 27 months, each of whom was ill with severe gastroenteritis at the time the isolations were made. The third strain was isolated from a bird snake (Thelotornis kirtlandii).

Although the biochemical reactions given by the three cultures indicated that they were members of the genus Salmonella, certain reactions were aberrant. In the terminology of Kauffmann (1960, 1963) the strains would be classified as atypical members of subgenus II. The cultures did not produce indol, gave positive methyl red reactions and negative Voges-Proskauer tests, and were able to grow on Simmons' citrate medium after 48 hours' incubation. Nitrate was reduced to nitrite and hydrogen sulfide was produced but urease and phenylalanine deaminase were not produced. Gelatin was liquefied slowly (7 days), growth occurred in KCN medium, and lysine and ornithine decarboxylases as well as arginine dihydrolase were produced. When tested according to the method of Kauffmann and Petersen (1956) D-tartrate and citrate were utilized after five days' and two days' incubation, respectively, while L- and I-tartrates and mucate were not utilized. Sodium malonate was not utilized and tests for β -galactosidase activity (ONPG test, method of LeMinor and Ben Hamida, 1962) were negative. Acid and gas were produced from glucose, maltose, mannitol, rhamnose, arabinose, xylose, sorbitol,

and trehalose within 24 hours. Salicin and cellobiose were fermented with gas production after 48 hours' and 3 days' incubation, respectively, and raffinose was fermented without formation of gas after 10 days' incubation. Lactose, sucrose, dulcitol, inositol, and adonitol were not fermented by any of the three cultures. Glycerol was not utilized by two strains while the third (2665-63) rapidly produced acid from it.

Culture 2048-63 was designated as the standard strain of the new serotype, hence it was used in the titrations and agglutinin absorption studies to be outlined. This culture belonged to Salmonella O group 50, was agglutinated to the titer of O antiserum prepared with S. greenside (O50), and reduced the titer of that antiserum for the homologous strain from 1:800 to 1:100 in absorption tests.

The flagellar antigens of strain 2048-63 were agglutinated to the titer of an H antiserum for S. cerro (z4, z23) and in absorption tests, removed all H agglutinin from it. Also, the H antigens of culture 2048-63 were flocculated by diagnostic dilutions of absorbed single factor z23 antiserum. Strain 2048-63 was immobilized when it was inoculated into semisolid medium that contained H antiserum for factors z4, z23. This indicated that the serotype was monophasic.

Thus, the antigenic composition of culture 2048-63 was characterized as 50:z4, z23:- and the designation S. flint was applied to it. The two remaining cultures (2049-63 and 2665-63) also reacted in the manner outlined and possessed the same antigenic structure as strain 2048-63.

REFERENCES

- Kauffmann, F. 1960. Two biochemical sub-divisions of the genus Salmonella. Acta Pathol. et Microbiol. Scand. 49: 393-396.
- _____. 1963. Zur Differential diagnose der Salmonella-Sub-Genera I, II und III. Ibid. 58:109-113.
- _____ and A. Petersen. 1956. The biochemical group and type differentiation of Enterobacteriaceae by organic acids. Ibid. 38:481-491.
- LeMinor, L. and F. Ben Hamida. 1962. Avantages de la recherche de la β -galactosidase sur celle de la fermentation due lactose en milieu dans le diagnostic bactériologique, en particulier des Enterobacteriaceae. Ann. Inst. Pasteur 102:267-277.