FOUR ADDITIONAL SEROTYPES OF ARIZONA BACTERIA

Mary A. Fife, Alma C. McWhorter and Mary M. Ball

Communicable Disease Center, Public Health Service
U.S. Department of Health, Education, and Welfare
Atlanta, Georgia

SUMMARY. Four additional serotypes of Arizona bacteria were characterized antigenically and biochemically. They were 22:27:28a,28b; 9a,9b:24:30; 21:24:28a,28b; and 26a,26b:23:31. The first serotype was isolated from human feces; no information as to the source of the second was available. The third serotype was recovered from water from a tank in which turtles were kept, and the fourth was isolated from a stool specimen from a human.

- - - - -

Among cultures submitted for antigenic analysis during 1962 and 1963 were four previously undescribed serotypes of the Arizona group.

With a few exceptions the biochemical reactions given by the four strains were typical of those obtained with members of the Arizona group (v. Edwards, Fife, and Ramsey, 1959, or Edwards and Ewing, 1962); hence only aberrant reactions and the time required for lactose fermentation to occur are mentioned.

Serotype 22:27:28a,28b (CDC 5020-62). This culture was received from the Laboratories of the Louisiana State Department of Health. It was isolated from a stool specimen from a female aged 47 years, but further information was unavailable.

The O antigens of culture 5020-62 were agglutinated to titer by Arizona O22 antiserum and reduced the titer of that antiserum for the homologous strain from 1:1000 to 1:50 in absorption tests. The flagellar (H) antigens of phase 1 and phase 2 of 5020-62 were flocculated to the respective titers of Arizona H27 and H28a,28b antisera and, in agglutinin absorption tests, removed all H agglutinin from those antisera.

Culture 5020-62 produced acid from lactose after 48 hours' incubation.

Serotype 9a, 9b:24:30 (CDC 2158-63). This strain was received from Prof. F. Kauffmann of the State Serum Institute, Copenhagen, who had, in turn, received it from Dr. S. Hoffmann, Robert Koch Institute, Berlin. Information as to the original source of the culture was lacking.

This serotype possessed O antigens that were agglutinated to the titer of Arizona O9a, 9b antiserum and removed all agglutinin from it in absorption tests. The phase 1 antigens of culture 2158-63 were agglutinated to the titer of Arizona H24 antiserum and reduced the titer of the antiserum for the homologous strain from 1:10,000 to 1:100. Phase 2 was flocculated to titer by Arizona H30 antiserum and removed all H agglutinin from it in absorption tests.

Originally lactose was not fermented by culture 2158-63 during a 30-day period of incubation and tests for galactosidase activity (ONPG test, LeMinor and Ben Hamida, 1962) were negative. However, lactose positive, ONPG positive variants were obtained from the strain by selection of colonies from MacConkey agar plates.

Serotype 21:24:28a, 28b (CDC 3396-63). This serotype was submitted by Dr. W.R. Giedt, Director of the Laboratories of the Washington State Health Department. It was isolated from the water of a tank in which turtles were kept.

The O antigens of the strain were agglutinated to the titer of Arizona O21 antiserum and exhausted all agglutinin from that antiserum in absorption tests. The antigens of phase 1 of culture 3396-63 were flocculated to the titer of Arizona H24 antiserum and, in absorption tests, reduced the titer of the antiserum from 1:10,000 to 1:200. The phase 2 antigens were agglutinated to titer by Arizona H28a, 28b antiserum and, in agglutinin absorption tests, removed all H agglutinin from that antiserum.

Culture 3396-63 utilized lactose and salicin after 48 hours' and 14 days' incubation, respectively, but failed to attack mucate.

Serotype 26a, 26b:23:31 (CDC 706-64). This culture was received from the Laboratories of the State Health Department of North Carolina and was isolated from a stool specimen from a female aged 12 years. No further information was received concerning it.

This serotype possessed O antigens that were agglutinated to the titer of Arizona O26a, 26b antiserum and, in absorption tests, removed all agglutinins from that antiserum. Since

Table 1. The relationship of O antigenic factors within Arizona O group 26.

O Antigen Suspensions	Arizona O Antisera			
	M 240 (O26a, 26b)		4850-52 (O26a, 26c)	
	Unabsorbed	Absorbed by 4850-52	Unabsorbed	Absorbed by M240 or 706-64
M240(O26a, 26b)	640	100	80	0
4850-52(O26a, 26c)	640	0	320	100
706-64(O26a, 26b)	640	100	80	0

the subdivision of Arizona O group 26 was undescribed, the relationships involved are outlined in Table 1, which is self-explanatory. The phase 1 and phase 2 antigens of culture 706-64 were flocculated to the respective titers of Arizona H23 and H31 and exhausted all H agglutinins from those antisera in absorption tests.

Culture 706-64 fermented lactose within 24 hours' incubation, but did not produce acid from mucate.

REFERENCES

- Edwards, P.R., M.A. Fife, and C.H. Ramsey. 1959.
Bacteriol. Rev. 23:155-174.
- _____ and W.H. Ewing. 1962. Identification of Enterobacteriaceae. 2nd Ed. Burgess Publishing Co., Minneapolis, Minn.
- LeMinor, L. and Ben Hamida, F. 1962. Ann. Inst. Pasteur 102:267-277.