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Occurrence of *Escherichia coli* O Group 101 in Disease of Animals[1]

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Reports associating *Escherichia coli* strains that belong to O group 101 with disease in animals are infrequent (C. C. Gay, Bacteriol. Rev. **29**:75, 1965; W. J. Sojka, Rev. Ser. No. 7, Commonwealth Bureau of Animal Health, Weybridge, England, 1965). This might be due to the fact that almost all O101 strains possess an A type of capsular (K) antigen that effectively masks O agglutination. Although the masking effect can be removed by heating at 121 C for 2.5 hr, such treatment may have a deleterious effect on the culture to be used for antigen.

Selection of thin transparent colonies for O antigen and thick mucoid colonies for K antigen eliminated the necessity of autoclaving cultures. The "thin-thick" method therefore was used to identify a number of *E. coli* strains that could not be accurately classified serologically.

The masking effect of the A type of capsular antigen was evident for all "thick" colony cultures. The O agglutination titer of thin antigens was four to eight times greater than the thick antigen when both antigens had been heated for 1 hr at 100 C and tested with antiserum prepared with heated (100 C) thin antigen. Under similar conditions, there was a twofold difference in O titer when antiserum prepared with heated (100 C) thick antigen was used. The latter produced O and K (A) antibodies in rabbits, whereas the production of K antibody was negligible with heated (100 C) thin colony antigens.

This method was used to study cultures of questionable identity with O101. Strains of *E. coli* belonging to O group 101 were isolated from the following: (i) lung, spleen, and intestine of a 3-day-old calf that died from acute enteritis and mild peritonitis (8 of 13 calves affected in the herd had died); (ii) duodenum and lymph node of a 1-day-old calf that died from *E. coli* septicemia (serogroup 117 was isolated from the liver); (iii) lung, kidney, spleen, intestine, and lymph node of a 3-day-old calf that died from pneumoenteritis (*E. coli* OX28 was isolated from same tissues); (iv) lung, spleen, kidney, ileum, and lymph node of a 3-day-old calf that died from septicemia-toxemia and pneumonia (*E. coli* OX28 was isolated from the ileum and lymph node); (v) ileum, lymph node, jejunum, and duodenum of a 1-week-old calf that died from *E. coli* toxemia and pneumonia; (vi) lymph node and jejunum of a 1-week-old calf that died from *E. coli* enteritis-toxemia. Additional strains were isolated from calves at the University of California. The 22 isolates were from one calf considered to be representative of a number of calves having the same illness. Two of the cultures were isolated from the blood, and the remainder were isolated from sites in the gastrointestinal tract selected from the abomasum to the rectum. Strains isolated from pigs were enteropathogenic for conventional and germ-free pigs. These strains were also used in ligated intestinal loops of young pigs and produced positive reactions, an indication of enteropathogenicity.

P. A. M. Guineé (Zentr. Bacteriol. Parasitenk. Abt. I Orig. **188**:201, 1963) isolated 22 strains of O group 101, all with an A type of K antigen. Four strains from pigs and six from calves were identical with the O101:K30:NM strain reported by T. A. Rees (Brit. Vet. J. **113**:171, 1957). Four strains from calves, two from pigs, one from a dog, and five from humans had an "A" type of K antigen that could not be classified. The *E. coli* K30 antigen therefore has been found with O groups 9 and 101, and it appears that an unclassified A type of K antigen also is found with O groups 9 and 101. H. W. Moon et al. (Am. J. Vet. Res. **27**:1007 and 1317, 1966) also reported O101 from enteritis in pigs and confirmed the enteropathogenicity of this serogroup.

It appears that *E. coli* O101 may be overlooked if proper procedures of serological identification are not used. The occurrence of O101 with a known pathogen (O117) and an unclassified suspected pathogen (OX28) requires further study.

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