Detection of an Emerging Pathogen, *Escherichia albertii* in Domestic Animals

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Escherichia albertii is an emerging pathogen that has been associated with diarrhea in Bangladeshi children and that causes diarrhea in experimentally inoculated rabbits. It has also been associated with septicemia and death in Fringillid birds. This pathogen is not identified by routine diagnostic methods utilized in veterinary diagnostic laboratories and therefore its prevalence and possible pathogenic role in domestic animals are currently unknown. However, in a pilot study, this agent was isolated from a fecal specimen from a diarrheic cow submitted to the WADDL, indicating its potential role as an enteric pathogen of domestic animals. .

We hypothesized that *E. albertii* is a component of the bovine intestinal flora and is associated with diarrheal disease in calves. Our objectives were 1) to compare several bacteriologic and genetic methods for detection of *E. albertii* in fecal specimens, 2) to determine the prevalence of *E. albertii* in diarrheic animals using specimens submitted to WADDL and 3) to conduct a case-control study to evaluate the association of *E. albertii* with calf scours on Washington dairy farms.

The best method for detection of *E. albertii* among those tested was direct plating on MacConkey agar plates, selection of lactose non-fermenting colonies, screening of candidate colonies by PCR for *eae* (*E. albertii* positive) and for *lysP*, and *mdh* markers (*E. albertii* positive for all three markers *vs. E. coli* negative for two of the three). Application of this method to fecal specimens from 28 diarrheic calves and 29 diarrheic cows submitted to WADDL failed to detect *E. albertii*. The pathogen was also not found when these methods were applied to specimens from 37 non-diarrheic adult cows, 28 non-diarrheic calves, and eight diarrheic calves from randomly selected dairies in the Washington area. However, screening of lactose non-fermenting colonies from 300 additional WADDL submissions from animals with diarrheal disease identified four additional candidate *E. albertii* isolates. Interestingly, among these four cases were the only chicken and swine specimens submitted during this period.

We conclude that at least a low prevalence of *Escherichia albertii* occurs in cattle, swine and poultry in Washington State (as detected by direct plating). Due to the low detected prevalence, the potential association of *E. albertii* with enteric disease will require additional investigation. However, the detection of this pathogen in diarrheic calves, an adult cow, a chicken and a pig are novel observations and suggest additional investigation of *E. albertii* as an enteric pathogen of domestic animals is warranted.

Our future plans include 1) surveying additional swine and poultry specimens for *E. albertii*, 2) comparing the genetic similarity of our new *E. albertii* isolates with control strains from PEI, Alaska and Scotland using pulsed field gel electrophoresis and 3) determining the DNA sequences of the 16S rDNA gene and the virulence-associated genes *eae* and *cdt* in these additional *E. albertii* isolates to assess their similarity to other strains of this species.