Detection of *Escherichia coli* O157 in Bovine Fecal Pats by a Multiple Sampling Strategy

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BACKGROUND

*Escherichia coli* O157, a human pathogen involved in multiple, sometimes fatal episodes of foodborne infections, has been traced to the consumption of contaminated animal products. Accuracy in determining the prevalence and presence of this pathogen in cattle is required to assess the effectiveness of pre-harvest interventions used to reduce its levels on the animal and the farm.

OBJECTIVE

To evaluate a multiple sampling strategy within the fecal pat and the likelihood of detecting *E. coli* O157 when a homogenate from the same sites is used.

METHODS

152 fecal pats were sampled in five different positions (A to E, respectively) and tested for *E. coli* O157 with selective pre-enrichment, immunomagnetic separation and PCR techniques for serotype confirmation. A homogenate obtained from these sampling sites was also analyzed to determine prevalence of the pathogen.

RESULTS

Of the 152 tested fecal pats for *E. coli* O157, the pathogen was confirmed in 65.13% (n = 99) of the fecal pats. Of those, 33 (21.71%), 12 (7.89%), 13 (8.55%), 14 (9.21%), and 15 (9.87%) pats had 1, 2, 3, 4, and 5 out of the five positions with a positive result for the pathogen, respectively. Twelve fecal pats (7.89%) tested negative for this pathogen in all the positions (A to E) but positive for the pathogen only in the homogenate. *E. coli* O157 was detected in 39.1% (n = 61), 21.8% (n = 34), 35.9% (n = 56), 26.3% (n = 41), 29.5% (n = 46) and 37.8% (n = 59) in position A, B, C, D, E, and the homogenate, respectively.

CONCLUSIONS

Even though no specific position seems to be more likely to harbor *E. coli* O157, results obtained from the homogenate indicate that this approach will increase probabilities of detecting this pathogen, and therefore, estimation of prevalence.