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Development of an Immunochromatographic Strip for the Rapid Detection of *Escherichia coli* O157

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Since *Escherichia*(*E*) *coli* O157:H7 was first recognized as a pathogen in 1982, it has become one of the most significant food-borne pathogens with its apparently low infectious dose and severe symptoms of illness. Screening depended on direct culture method had the advantage of providing an isolate, but major disadvantages were labor intensive and needed several days before yielding results. We developed immunochromatographic strips (ICS) for the 10 minutes screening of *E. coli* O157 by using *E. coli* O157 antibody and 40 nm colloidal gold particles. The specificity of *E. coli* O157 ICS was determined by using 22 pure cultured-bacterial strains, i.e. 7 *E. coli* strains and 15 non-*E. coli* bacterial strains. *E. coli* O157:H7 reacted strongly in this ICS, whereas the others were all negative. The sensitivity of ICS was determined with raw beef inoculated with *E. coli* O157:H7 in a range of 1.0 $\times 10^8$ to 1.0 CFU/g of beef. The minimum number of *E. coli* O157 detectable was 1.0×10^6 CFU/g of raw beef with pre-enrichment and 1.0 CFU/g of raw beef with enrichment, respectively. It was necessary for the enrichment procedures to detect small numbers of *E. coli* O157. *E. coli* O157:H7 was not isolated from *E. coli* O157 ICS-negative samples and it meaned that there was no false negative reaction in this strip. Consequently, *E. coli* O157 ICS-negative sample was not required for culture confirmation of *E. coli* O157:H7, whereas only ICS-positive sample was considered to be presumptive until confirmed by culture. Because immunochromatographic assay has been a easy-to-use, 10 minutes detection, cost-effective, high specific method, it will be widely used for the screening of food-borne pathogens in clinical or food inspection laboratories.