Thesis Title	Direct Blot ELISA for the Rapid Detection of Enterohemorrhagic *Escherichia coli* (EHEC) in Food Samples
Name	Jirawan Oonmettaaree
Degree	Master of Science (Pharmacy)
Thesis Supervisory Comittee	Arunee Saraya, M.Sc. Malyn Chulasiri, Ph.D. Pravate Tuitemwong, Ph.D. Koorance Tuitemwong, Ph.D.
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ABSTRACT

The detection of *Escherichia coli* O157:H7 in 114 raw milk samples and 50 ground pork samples were carried out using rehydrated dry film with direct blot ELISA (Petrifilm ™ EHEC, 3M) and conventional sorbitol MacConkey agar (SMA). Rates of primary presumptive *E. coli* O157:H7 in raw milk samples were 27.19% and 91.23% respectively for direct blot ELISA and SMA. Presumptive positive samples were confirmed by using Fluorocult ® *E. coli* O157:H7 agar (MUG test). Rates of secondary presumptive *E. coli* O157:H7 were 32.26% of positive results in direct blot ELISA and 55.76% of positive results from SMA. Both positive results were confirmed by ELISA (*E. coli* O157, TECRA) and rapid methods (Lumac Dipstick, Reveal, VIP). Rates of confirmed *E. coli* O157:H7 were 10% of 3M direct blot ELISA in TECRA and rapid test kits, respectively and 5.17% of SMA in TECRA. Then the positive confirmed samples with ELISA were tested

with O:157 and H:7 antiserum and 10% was agglutinated with both antiserum. Ground pork samples were enriched with mFC+n broth and tested using the same method as described for raw milk samples. Rates of primary presumptive *E. coli* O157:H7 were 74% and 80%, respectively. The positive samples, which were tested by Fluorocult @ *E. coli* O157:H7 agar, were 2.7% and 15%, respectively. Secondary presumptive *E. coli* O157:H7 showed 16.67% positive results with ELISA test but not with the other test kits: Neogen Reveal and Lumac Dipstick. However, one sample showed positive results with late incubation with VIP. Finally, a positive isolate from ground pork samples was tested with antiserum and had agglutination only with O:157 antiserum.

The direct blot ELISA approved to be more efficient than the conventional SMA method. The ELISA method also cost more than the SMA. *E. coli* O157:H7 ATCC 43895, presumptive positive *E. coli* O157:H7 from raw milk samples (PT24/7-4) were susceptible to penicillins, cephalosporins, aminoglycosides, tetracyclines, phenicols, diaminopyrimidines, sulphonamides, 4-quinolones, and nitrofurans.

The *E. coli* O157:H7 isolate from raw milk samples (PT24/7-4) was identified as the verotoxin 1 (shiga-like toxin 1) producing strain by PCR method.