PEC1.03 **Evaluation of test kits for the detection of *Escherichia coli O157* in raw meats and cattle faeces**

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Since *Escherichia coli* O157 may be present in food and environmental samples in only small numbers and the infectious dose is low, sensitive and rapid detection methods are needed to ensure a safe supply of foods. This study has evaluated the performance of several commercial test systems for the detection of *Escherichia coli* O157.
First, the recovery rates of *E. coli* O157 after immunomagnetic separation (IMS) using Dynabeads anti *E. coli* O157, Dynabeads MAX O157 and Captivate O157 were determined by examining pure cultures, as well as spiked beef and cattle faeces broth enrichments. Based on the performance and the costs, Dynabeads anti *E. coli* O157 were selected for subsequent studies.
Then, experiments with artificially contaminated samples of beef and cattle faeces were done to determine the detection limits of 5 different methods. The methods evaluated comprised of concentration of *E. coli* O157 by using Dynabeads anti *E. coli* O157 (IMS), the VIDAS-ICE (immunocapture) and the VIDAS-UP (phage recombinant protein technology) systems, and real-time PCR detection methods using the GeneDisc cycler and the LightCycler. Samples were enriched in modified tryptone soya broth with novobiocin (mTSB+n) and buffered peptone water (BPW), for both 6 and 18 h. The Dynabeads anti *E. coli* O157 method and the PCR detection method using the GeneDisc cycler were the most sensitive detection methods, detecting an initial 1 cfu in beef samples after 6 h of incubation in mTSB+n or BPW. The VIDAS-UP method could detect an initial 10 cfu, while the VIDAS-ICE and LightCycler method could only detect an initial 100 cfu. Higher detection rates were achieved with 18 h incubations, where an initial 1 cfu could be detected with all 5 methods. For cattle faeces, the Dynabeads anti *E. coli* O157 method was the most sensitive and could detect an initial 1 cfu after 6 h incubation in mTSB+n, while with the VIDAS-UP and VIDAS-ICE methods, an initial 10 cfu could be detected and both PCR methods could only detect an initial 100 cfu. Detection rates were lower in BPW with thresholds of 100 cfu for the methods using the VIDAS-ICE, VIDAS-UP and the GeneDisc cycler, and >100 cfu for the LightCycler method.