

Karuna Teerasamit 2006: Efficiency Evaluation of Immunomagnetic Beads Coated with Antibody to *Salmonella*. Master of Science (Microbiology), Major Field: Microbiology, Department of Microbiology. Thesis Advisor: Assistant Professor Kooranee Tuitemwong, Ph.D. 87 pages.
ISBN 974-16-1767-4

This study aimed to evaluate the detection efficiency of *Salmonella* using immunomagnetic separation technique (IMS) prepared in our laboratory against Dynabeads[®] anti-*Salmonella* and conventional ISO6579:2002 methods. Paramagnetic beads (1×10^7 M-280 Tosylactivated beads) were coated with polyclonal antibodies (IgG at 200 micrograms protein) against somatic antigen of *Salmonella* (OMA, OMB and I groups) in 0.1 M sodium phosphate buffer pH 7.4 at 37 °C for 16-24 hours and allowed 1 hour for immuno-capturing. The results indicated that coated Dynabeads M-280 Tosylactivated and Dynabeads[®] anti-*Salmonella* had low specificity because non-*Salmonella* could bound to the beads. Coated Dynabeads M-280 Tosylactivated could not consistently detect *Salmonella* at cells lower than 10 CFU/ml. For the detection of 30 food samples by IMS and ISO6579:2002 methods, incubation time in buffered peptone water medium of IMS method was reduced for rapid detection purpose. Both coated Dynabeads M-280 Tosylactivated and Dynabeads[®] anti-*Salmonella* could detect *Salmonella* equally at 25 out of 30 samples or 83.3%. The ISO6579:2002 method reported 26 positive samples or 86.7%. The efficiency comparison of coated Dynabeads M-280 Tosylactivated and Dynabeads[®] anti-*Salmonella* methods for *Salmonella* detection indicated that the sensitivity, specificity and accuracy were 96.15%, 100% and 96.67%, respectively, compared with that of the conventional ISO6579:2002 method. It was concluded that IMS techniques could be used as alternative methods for detection of *Salmonella* with total detection time reduced to 2 days. The IMS methods are simple and the beads-bacteria complex could be subsequently analyzed by other techniques.

Karuna Teerasamit

Student's signature

Kooranee Tuitemwong 12, 05, 06

Thesis Advisor's signature