CHAPTER 5 CONCLUSION AND SUGGESTION

Conclusions and Suggestion

Immunoassay based on MWCNTs/AuNPs composite was shown significantly improve in the sensitivity and selectivity of *S. enterica* serovar Typhimurium detection. Gold nanoparticle were successfully attached on carbon nanotubes by direct deposition. MWCNTs from Cheap Tubes Inc. produced better signal intensity than those from Ted Pella Inc. The composite between MWCNTs with the length of 10-30 μm AuNPs-citrate gave higher signal than that of 500 nm and AuNPs BH_4. The platform using magnetic beads together with MWCNTs/AuNPs was used to replace MWCNTs/AuNPs immunoassay on nitrocellulose membrane because it gave much clearer signal intensity. MWCNTs/ AuNPs blocked with 2% BSA and without blocking gave the limit of detection as low as 18 CFU/ml and 42 CFU/ml, respectively for 5 min silver development with 2.5 h detection time. Determination of *S. enterica* serovar Typhimurium in plain and low fat milk resulted in limit of detection of 10,914 CFU/ml and 134 CFU/ml respectively with 2% BSA blocking. This immunomagnetic bead system provide high selectivity as it could not detect *Escherichia coli* cells in buffer, plain milk and low fat milk. This array based platform affords simultaneous and low cost detection.

Determination of the amount of AuNPs that are attached on MWCNTs. Reducing the assay time to 1 h by decreasing each incubation step to make this platform feasible for diagnostic test. In addition, this platform may be applied to DNA detection because it shows high sensitivity.