

Warintorn Jantongin 2011: Development of Test Kit for Detection of *Salmonella* species by Paper Chromatography Dot Blot Hybridization Technique. Master of Science (Agricultural Biotechnology), Major Field: Agricultural Biotech, Interdisciplinary Graduate Program.  
Thesis Advisor: Associate Professor Thaweesak Songserm, Ph.D. 90 pages.

A simple test kit developed in this study was based on paper chromatography and hybridization principles and used for detection of *Salmonella* spp. DNA in terms of rapid, specific, sensitive, accurate, simplified and cost effective kit to be used in laboratory and field.

*Salmonella enterica* serovar Typhimurium was used as a bacterial model for this study. DNA was extracted by Chelex-100 method. The variables of DNA concentration were used to determine the sensitivity and specificity of the new technique by dotting it on nylon strip membrane. Then, three specificity probes of *Salmonella* spp. chromosomal DNA were designed and used to detect the DNA dot in variable condition of paper chromatography dot blot hybridization technique (PACHA). The optimized condition was selected and uses it to detect *Salmonella* spp. in chicken meat.

At hybridization step, the control temperature at 75°C, all 13 *Salmonella* spp. strain DNAs were positively detected by PACHA technique. No false positive result appeared in negative bacteria control group. The estimate of *Salmonella* spp. DNA concentration for detecting with this technique was as least as 100 nano grams per dot blot and 1 nano gram of probe concentration for each strip test. Required time for the test was approximately 90 minutes. This PACHA is a simple, rapid, specific, sensitive, and economical technique and can be applied to use in general laboratory and field. Moreover, this method can detect  $9.2 \times 10^5$  CFU/ml of *S. Typhimurium* in experimentally contaminated chicken meat.

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Thesis Advisor's signature