PRELIMINARY STUDY ON DEVELOPING RAPID METHOD TO DETECT *Escherichia coli* IN FOOD SAMPLES

A dissertation submitted to the

Faculty of Animal Science and Export Agriculture

Uva Wellassa University

in partial fulfillment of the requirement of

the degree of

Bachelor of Palm & Latex Technology and Value Addition

by

BULATHSINHALAGE HASHAN KAVINDA PERERA

Department of Export Agriculture

Faculty of Animal Science and Export Agriculture

Uva Wellassa University

2016

ABSTRACT

Foodborne pathogen detection has gained much value due to it's importance regarding assuring food safety. *Escherichia coli* is a commonly found foodborne pathogen and it is used as an indicator bacterium for detection of fecal matter contamination. Number of methods have developed to detect *E. coli* in food and water. Conventional methods for detection of *E. coli* include culture based methods along with biochemical tests for confirmation and separation and concentration techniques. These methods have drawbacks such as high time consumption, specificity related problems and laborious nature of tests. To overcome those drawbacks, modern rapid detection methods have developed such as biosensor methods, Nucleic acid based methods, Immunological methods. They have tried to overcome above problems. But, still present problems as sensitivity and specificity related problems, complexities in use, high cost per test and resulting of false negative and positive answers. This study was carried out as a preliminary study on developing rapid method to detection of *E. coli* in food samples. Initially, local *E. coli* strain isolation and purification was done. Then confirmation of *E. coli* presence was done using biochemical tests. Then total protein analysis was done using SDS PAGE gel electrophoresis. Gel pattern images were analyzed. Same method was applied for *Salmonella spp.*, *Bacillus subtilis*, and *Pseudomans aeruginosa*. Results revealed, each microbial species have different patterns of protein molecular weight distribution. This pattern can be taken within four hours. This total protein analysis method can be used to detect *E. coli*. But, further studies are needed for the confirmation.

Key words: E. coli, Rapid detection, Food safety