

Wipawadee Ontoum 2010: The Contamination of *Salmonella* spp. on Exported Fresh Produce during Primary Production. Master of Science (Food Science), Major Field: Food Science, Department of Food Science and Technology. Thesis Advisor: Assistant Professor Warapa Mahakarnchanakul, Ph.D. 111 pages.

In 2005, the incidence of *Salmonella* spp. contaminated in fresh produce export caused an unreliable tame and put more stringency in export inspection by oversea buyers. Therefore, the incidence caused negative impact on Thai fresh produce market and all the stakeholders in their business chain. The PCR technique combination with MPN method (MPN-PCR) was conducted to investigate the amount of *Salmonella* spp. in sweet basil and coriander during primary production and farm environment. All samples were taken from 2 farms in Nakhonpathom province then microbial contamination was analysed by modified standard method and MPN-PCR. This MPN-PCR gives the rapid qualitative results and provides the useful information to manage risk in fresh produce exporting. Moreover the number of *Salmonella* spp. contamination in fresh produce production will be useful for further research such as microbial risk assessment. The isolates from typical colony on selective media were also identified. The highest number of *Salmonella* spp. found on sweet basil was 210 MPN/g and serotype Hvittingfoss (group I) was found in sample before washing. Singapore (group C) and also Weltevreden (group E) serotype were found in exported sweet basil, as well as Aberdeen (group F) and Bovismorbificans (group C) in glove and table. And group J II 17: g,t: - (O: 17) was found from container. The highest count of *Salmonella* spp. was 44 MPN/g on coriander for exporting. Augustenborg (group C) were found in samples before washing, after soil remove, after transporting to factory and in washing water. In addition Singapore (group C) was isolated from exported coriander. Serotype Newport (group C), Albany (group C) and IIIb 48: 1, V: 1, 5, 7 (O: 48) were found in coriander samples after washing, irrigating water and table, respectively. MPN-PCR method gave a rapid result ( $\leq 48$  h.) and better recovery compare to modified standard method (4-6 days), a total of 282 samples was found positive as 65.60%. The investigation of cell survival in four type of manure using as fertilizers at 25°C and 40°C was investigated. The results showed that *Salmonella* spp. survived in bat manure within 21 days at 25°C. While cell in chicken manure was not detected since day 1 at 40°C. The ability of *E. coli* survival in bat manure (25°C) was found at day 12 where as, *E. coli* were not detected in swine, cow and chicken manure (40°C) at day 1. Besides the manure type, the storage condition particularly the temperature affected on the survival of both pathogens in these fertilizers.

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Thesis Advisor's signature