Prevalence of Foodborne Pathogens and Spoilage Bacteria in Retail Foods Purchased in Thailand

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Abstract: The prevalence of foodborne pathogens or food spoilage bacteria in retailed foodstuffs that causes diarrheal diseases or quantity/quality loss of foods were determined in this study. Four categories of 137 raw food samples (meat, vegetable, fish or sea food and fermented food) and 133 soy bean curd (tofu) (packaged and unpackaged) were purchased randomly from 14 open markets and 7 supermarkets in Thailand from August 2010 to January 2012. 12 kinds of foodborne pathogens and food spoilage bacteria were identified using conventional culture methods and/or immunological/molecular biological methods. More than 85% of each raw food samples except for fermented foods was contaminated with coliform bacteria and 53% of 270 samples were contaminated with *Escherichia coli*. However, no *E. coli* O26, O157 or O111 strain was isolated except for one *E. coli* O157:H7 strain (stx 1 and 2 negative) from 173 *E. coli* isolates. 67% of meat samples were contaminated with *Salmonella* spp. In contrast, the contamination rate of *Salmonella* spp. in vegetable (5%), fermented food (9%) or tofu (4%) samples were comparatively low. The contamination rate of *Salmonella* spp. in meat, fish or sea food and tofu purchased in open markets were higher than those purchased from supermarkets. The frequently encountered *Salmonella* spp. isolated from all the samples was *Salmonella* Corvallis (9.6%) and *S. Rissen* (8.5%). Seven strains of *Cronobacter sakazakii* were isolate from 5 categories of foods except fermented foods. One strains of *Yersinia enterocolitica* serotype 0:5 were also isolated from tofu. Two *Listeria monocytogenes* strains were isolated from chicken and ground pork samples. The highest contamination rate of *Bacillus cereus* was observed in fermented food (82%). Ninety one *Staphylococcus* spp. including 1 *S. aureus* (coagulase negative) strains were isolated from all the collected samples. The contamination rate of *Staphylococcus* spp. in fish or sea food and vegetable purchased in open markets was likewise higher than those purchased in supermarkets. 79% of total sample was contaminated with *Enterococcus* spp. and 5% of the isolated *Enterococcus* spp. were able to grow on VR-EF antibiotic agar and were drug resistance strain. 100 and 34 *Salmonella* spp. isolates exhibited resistance to 1 to 30 kinds of antibiotics, in 15 antibiotics tested. These results suggested the implementation of good hygienic practices were required to reduce the risk of food poisoning and food spoilage loss.

Key words: Prevalence, foodborne pathogens, spoilage bacteria, retail foods, Tofu, Thailand.