ISSN: 1391-8796

Proceedings of  $7^{\text{th}}$  Ruhuna International Science & Technology Conference

University of Ruhuna, Matara, Sri Lanka

January 22, 2020



## Bacterial contamination of three commonly consumed raw vegetables from the manning market and six selected supermarkets in the Colombo municipality area, Sri Lanka – A preliminary study

Nandasena A<sup>1,4</sup>, Wijesundara C.<sup>2</sup>, Chathuranga B.A.G.<sup>3</sup> and Bandaranayaka K.O.<sup>4</sup>\*

<sup>1</sup>Faculty of Health and Life Sciences, Management and Science University, Malaysia
<sup>2</sup>Ministry of Health, Colombo, Sri Lanka
<sup>3</sup>Department of Medical Laboratory Sciences, Faculty of Allied Health sciences, University of Sri Jayawardenapura
<sup>4</sup>Management and Science Institute, Colombo 03

Leafy vegetables have popular among people around the globe as these vegetables could be consumed with minimal processing. However, they play a major role in transmitting food-borne diseases. This descriptive cross-sectional study was designed to assess the bacterial contamination of commonly consumed vegetables; Lactuca sativa (lettuce), Centella asiatica (gotukola) and Brassica oleracea var capitata (cabbage). Vegetable samples were collected from the Manning market and two randomly selected outlets of three selected supermarket chains; A, B & C located in Colombo 03, Colombo 05 and Colombo 06 respectively in Colombo municipality area, each week for a period of two months. Spread plate method was used for the calculation of viable colony counts and API 20E Enterobacteriaceae identification test aided with gram staining and oxidase test for bacteria identification. Mean colony counts were considerably high in all purchased vegetables from "A", "B" and "C" supermarkets and the Manning market. From the selected three vegetables, highest colony counts were observed from cabbage. Further, all three vegetables showed the highest contamination in supermarket chain "A" while no potentially hazardous organisms were found from supermarket chain "C". More than 80% of the isolated colonies were gram-negative organisms and from these 51.1% were gram-negative bacilli. Furthermore, several bacterial species belonging to families Enterobacteriaceae: Pantoea spp., Enterobacter cloacae, Enterobacter aerogenes and Klebsiella spp. Family Pseudomonadaceae: Pseodomonas putida; from Vibrionaceae: Vibrio fluvialisand from family Xanthomonadaceae: Stenotrophomonas maltophilia were isolated. Presence of Enterobacteriaceae was confirmed; signifying the possible presence of bacterial pathogens in vegetables which could pose a potential health hazard to the consumer.

**Keywords**: raw leafy greens, minimally-processed vegetables, bacterial contamination and coliforms

<sup>\*</sup>Corresponding author: kalpanee.b@gmail.com