

## Determination Of Pathogenic Bacteria in Commercially Available Fresh Green Leafy Vegetables in Western Province, Sri Lanka

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### Abstract

Foodborne illnesses from pathogenic microorganisms are a global health concern. Fresh green leafy vegetables are vital but prone to contamination, necessitating precautions. The present study aimed to determine the pathogenic bacterial contamination in the fresh green leafy vegetable samples from Pettah, Wellawatte, and Nugegoda areas in Western Province, Sri Lanka. A total of 250 fresh green leafy vegetables, were purchased from commercial markets, with five different varieties represented. From each group of 50 samples, microorganisms were isolated and identified using conventional standard methods and biochemical tests such as Indole, Citrate, MRVP, TSI, Motility test, chromogenic culture, and Gram-staining. The analysis was obtained from Microsoft Excel 2010 and SPSS V23.0. Eight pathogenic bacterial species namely; *Escherichia coli* (20%), *Shigella* spp. (25%), *Klebsiella* spp. (50%), *Enterobacter* spp. (15%), *Proteus* spp. (10%) and *Salmonella* spp. (25%), *Citrobacter* spp. (15%) were identified from green leafy vegetables. The *Lactuca sativa* shows the highest significant pathogenic contamination *Escherichia coli* (60%) and *Salmonella* spp. (60%), followed by 20% of contamination each of *Klebsiella* spp. and *Proteus* spp. compared to other varieties ( $P = 0.003$ ,  $p < 0.05$ ). All three regions exhibited substantial contamination with a minimum of five microorganism types, with the Pettah region displaying the highest contamination at 100% followed by Wellawatta and Nugegoda but there is no significant difference in contamination ( $P = 0.115$ ,  $p > 0.05$ ). The Pettah region demonstrated a significant prevalence of *Salmonella* spp. contamination at 57.14%, whereas Nugegoda exhibited *Klebsiella* spp. at 50% ( $p < 0.05$ ). Poor hygiene issues of vendors identified as key facts contributing to the pathogenic contamination.

**Keywords:** *Pathogenic microorganism, Contamination, Green leafy vegetables*