Determination of Heavy Metal Contamination of Economical Important Food Commodities

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This study was conducted to evaluate the presence of heavy metals (Arsenic (As), Cadmium (Cd), Lead (Pb), Copper (Cu)) in economically important seven food commodities such as red onion, B onion, chilli, potato, apple, orange and grapes. Five hundred samples from both local and imported food commodities were randomly collected, and analyzed for the presence of heavy metals following standard methods of AOAC 999.10 and AOAC 986. 15–17th edition. Heavy metal contaminations of these local and imported samples were compared with recommended maximum safe levels (WHO/FAO standards, As = 0.1, Cd = 0.2, Pb = 0.3 and Cu = 40 ppm) and area wise comparison was carried out for local samples. According to the acceptable levels mean values of As, Pb and Cu in local food commodities were below the maximum safe levels. One sample t- test was used to analyze the data. The mean value of Cd content in potato samples (0.2436 ± 0.74 ppm) had significantly ($P < 0.05$) exceeded the maximum safe level (MSL), while other commodities had not exceeded the consumer safety level of Cd. In imported food commodities, the values of As, Pb and Cu were below the MSL. The mean value of Cd content in potato (1.134 ± 2.68 ppm) and apple (1.075 ± 4.138 ppm) were exceeded the MSL significantly, while red onion, B onion, chilli, orange and grapes commodities had not exceeded the MSL of Cd. Pb concentration was high in Bibila and Amparaorange samples. Pb and Cd levels were high in red onion samples collected from Jaffna. High concentration of Cd was reported in B onion collected from Dambulla. Nuwara Eliya reported high concentrations of As, Cd and Pb in apple, potato and orange while high concentrations of As, Cd and Pb were reported in apple, grapes and orange for samples collected from Pettah. The results revealed that some commodities have exceeded the MSL for Cd, As and Pb in both imported and local samples and further analysis should be carried out in the areas where high heavy metal contaminants were reported.

Keywords: Consumer safety, Economically important food, Heavy metal