Abstract

Assessment of heavy metal contaminants, nitrate and pesticide residues was done on kale (*Brassica olaracea* var. *olecephala*), a leafy vegetable grown by farmers in peri-urban sites of Wangige, Athi River and Ngong in Nairobi, Kenya in both wet and dry seasons. Kale leaves

were picked from lower, middle and upper part of each plant randomly selected in a zigzag pattern in each plot per farm alongside soil samples to a depth of 15 cm from the same plots. Irrigation water samples used by the farmers on the vegetable crop and manures from Wangige site were also collected. Concentrations of Arsenic (As) in kale leaves obtained from Wangige, Ngong and Athi River were 17.72, 10.68 and 8.15 mg/kg, respectively. Wangige vegetables exceeded the acceptable critical levels of 15mg/kg for As in leafy vegetables. The concentration of Pb in kale ranged from 0.39 mg/kg to 3.06 mg/kg for Wangige and Athi river, respectively, translating to a dietary Pb intake of 0.078mg/kg to 0.612mg/kg in adults. Kale leaf tissues from Wangige and Ngong had levels above the recommended maximum crop concentration of 0.2 mg/l. Nitrate content in kale from the three locations were within acceptable daily intakes. In a frequency of 1/5 farms, diazinon, cypermethrin, prophenos, biternol exceeded the maximum residue levels in both wet and dry seasons. These findings indicate that safety of leafy vegetables produced in the peri-urban areas of Nairobi is likely to be compromised from the farms through use of untreated /low quality irrigation water and manure and improper pesticide use. The policy implication of the findings is to promote awareness among growers of the need to apply safe water and pesticides, especially because some of the growers sampled in this study supplied supermarkets which are generally perceived by consumers to retail safe foodstuffs.