

Original Paper

Concentration of cadmium, lead, zinc and copper in the cucumber and tomatoe in Northern Iran

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Abstract

Background and Objective: Nowadays the food contamination is increased and threatening human health. This study was done to determine the concentration of cadmium, lead, zinc and copper in tomatoes and cucumber in Northern Iran.

Methods: In this descriptive study, 48 cucumber and 48 tomatoes samples were collected randomly from the two sampling stations of Gorgan and Gonbad the two cities in Golestan province of northern Iran during spring and summer of 2012. Cadmium (Cd), lead (Pb), zinc (Zn) and copper (Cu) concentrations were determined by voltammetry method of 797 Polarography models.

Results: Mean±SE of Zn, Cd, Pb and Cu concentration in samples of cucumber in Gonbad was 53.4±7.7, 0.09±0.013, 1.47±0.21 and 4.1±0.66 mg/kg wet weight, respectively. Mean±SE of Zn, Cd, Pb and Cu concentration in samples of cucumber in Gorgan was 60.3±8.7, 0.12±0.017, 1.4±0.2 and 3.7±0.53 mg/kg wet weight, respectively. Mean±SE of Zn, Cd, Pb and Cu concentration in samples of tomatoes in Gonbad was 17.9±2.6, 0.03±0.004, 0.5±0.07 and 0.85±0.12 mg/kg wet weight, respectively. Mean±SE of Zn, Cd, Pb and Cu concentration in samples of tomato in Gorgan was 23.8±3.4, 0.08±0.01, 0.66±0.09 and 1.7±0.24 mg/kg wet weight, respectively. Mean concentrations of Cd and Pb in cucumber and tomatoes samples of Gonbad was up to 2, 14, 0.6 and 5 times and mean concentrations of that in cucumber and tomatoes of Gorgan was up to 2.4, 14.4, 1.6 and 7 times exceed the maximum allowable limits of WHO/FAO.

Conclusion: Mean concentration of Cd and Pb in cucumber and tomato samples was exceeded the maximum allowable limits of WHO/FAO and mean concentration of heavy metals in cucumber was more than tomato samples.

Keywords: Zinc, Cadmium, Lead, Copper, Cucumber, Tomato, Iran

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