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Abstract

Introduction: Nitrate is one the important of water and food pollution, due to natural sedimentary dissolution containing nitrates, animal waste and chemical industry activities, urban and industrial waste water as well as the increasing use of chemical fertilizers, its concentration is increased in surface and underground water, agricultural .products such as fruits, vegetables and meats

Although nitrate is non-toxic to humans in less than the standard, but may be converted to nitrite in the human body and combined with the amides, amines and amino acids and produce nitrosamine compounds, that these compounds can lead to stomach, intestines cancer and dangerous blood diseases. According to guidelines of WHO, acceptable daily intake (ADI) of nitrate is zero to 3.7 mg per kilogram of body weight per .day

According to the impact of nitrates on public health and water and food are the most important sources of nitrate in humans so measuring and monitoring the concentration of nitrate in drinking water and foods for reducing the amount of daily nitrate intake is important. Therefore, this study aimed to determine the nitrate concentration in food .and drinking water in Khameneh and Shabestar cities in northwest of Iran

:Materials and methods

In this study, consumption of food and nutritional status of Shabestar and Khameneh were extracted in in Azar cohort design by nutritionists. 12 samples of drinking water were taken randomly from the drinking water network points of each city (total 24 samples) in two seasons (low rainfall and high rainfall). Nitrate concentration in drinking .water was analyzed by standard methods

kind of food samples were taken from 5 retile centers and transferred to the ۶۰ environmental chemical laboratory of health faculty. Food samples were separately prepared and mixed together and were dried at 70 °C. The dried samples were milled and then passed through a 20 mesh sieve. Then two sub-samples were taken from each initial sample. finally, 24 drinking water samples and 236 food samples were .analyzed. The data and results analysed by SPSS and independent two t test sample

:Results

The concentration of nitrate in drinking water was less than the maximum limit .recommended (50 mg) in both cities

The results of this study showed that acceptable daily intake of nitrate per person 751.58 mg in Shabestar, which if the average weight of each person considers 70 Kg the amount of received nitrate per person per kg of body weight achieved 10.74 mg. Also, ADI of per person were calculated 650.90 mg, or 9.30 mg per Kg of body weight in the Khameneh. In addition, based on the results of present study, the highest daily intake .related to fruits and vegetables in both city of Shabestar and Khameneh

The highest and lowest concentrations of nitrate in vegetables in both cities were related to garlic and Savory, respectively. Also, the highest concentration of nitrate in fruit related to apples in both cities and the lowest concentration the mandarin in .Shabestar and the orange in Khameneh

:Discussion and conclusion

Acceptable daily intake of nitrates was more than the maximum limit recommended by the World Health Organization in both cities (In Shabestar 2.9-fold and 2.5-fold in Khameneh). Considering the results of most studies on the negative health effects on public health, it is suggested, nitrate sources of drinking water and agricultural soils

should be identified. Also, recommended the concentration of nitrates in food and drinking water continuously be monitored and planned to decrease to the under .standard level

:Key words

Nitrate, Food, Drinking water, Daily intake, Shabestar, Khameneh