عنوان مقاله:

Arsenic and heavy metal concentrations in human hair from urban areas

نویسندگان:

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خلاصه مقاله:

Background: As concentrations of heavy metals in hair can reflect both metals exposure and intake concentrations, hair sample analysis is widely applied in forensic sciences, evaluation of environmental or occupational exposure and other studies. The aim of this study was to evaluate the concentrations of As, Cd, Pb, Cr, Cu, Co, Mn, Zn, Fe and Ni in the scalp hair of an urban population from Kermanshah in western Iran. Methods: In the present research, ۳۰ points of the city were selected for human scalp hair sampling. Samples were taken from healthy inhabitants (aged ۶ to ۴۶ years) in Kermanshah city. Multivariate analysis method was applied to distinguish the anthropogenic and natural sources of heavy metals. Levels of elements in the scalp hair were measured by ICP-MS. Results: The mean concentrations of Cr, Mn, Fe, Co, Ni, Cu, Zn, Cd, Pb and As were ۳۳.۵۳±۹.۰۵, ۲۷.۹۸±۷.۷۷, ۲۰۳.۱۸±۲۲.۳۱, ۱.۹۴±۰.۸۵, ۱۸.۴۴±۳.۴۰, ۱۰۷.۱۱±۲۲.۵۶, ۱۱۹.۲۱±۱۰.۵۲, ۰.۹۷±۰.۳۶, ۶۰.۲۷±۱۳.۸۴, and ۰.۳۴±۰.۵۱ μg/g in the urban area, respectively. The highest concentration of all elements was found in the age group of ۳۱-۴۰ and ۴۱-۵۰ years except Fe, the maximum concentration of which was found in the age group of ۶-۲۰ years. Significant differences were found between smokers and non-smokers. Conclusion: Comparison of the heavy metals concentrations in the scalp hair of this area showed that the concentrations of the elements were clearly higher than those reported in other studies. However, the high concentrations of the elements in hair indicated that the inhabitants in the urban areas of Kermanshah might be at risk of exposure to high levels of toxic elements.

کلمات کلیدی:

Scalp hair, Metals, Arsenic, Urban areas, Principal component analysis

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