GEOGENIC ARSENIC IN DRINKING WATER OF CHELPU REGION (NORTH OF KASHMAR-NE IRAN): IMPLICATION FOR ITS CONCENTRATION IN URINE AND HAIR BIOMARKERS

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Objectives: Contaminated water and food is the major route of human exposure to arsenic (As). Hydrothermal alteration and mineralisation of high As content sulfide-minerals such as Realgar, Orpiment and Pyrite occurred in Chelpu area in north eastern Iran. Determination of arsenic concentrations in water, and hair and urine biomarkers in Chelpu and Akbarabad (high exposure villages), and Keriz (low exposure village) was the purpose of this study.
Methods: Arsenic (∝g/l) in drinking water was measured by ICP-MS. Urine (n=12) and hair (n=12) samples were collected from individual living people in the area. Arsenic concentration in urine (∝g/l) and Hair (∝g/g) samples were measured by AAS.
Results: Arsenic concentration in water sample of low exposure area was 12 ∝g/l, but 16-66 ∝g/l in high exposure area. Urine As concentrations in Keriz and Chelpu-Akbarabad villages were 9.00-19.50 ∝g/l (14.25±7.42) and 47.50-271.40 ∝g/l (98.77± 68) respectively. Hair as concentrations in Keriz and Chelpu-Akbarabad villages were 0.37- 0.41 ∝g/g (0.39±0.03) and 0.45-1.37 ∝g/g (1.04± 0.31) respectively.
Conclusions: Represented data in this study indicate that As contents in samples from Chelpu and Akbarabad (high exposure villages) are higher than those in Keriz (low exposure village). Among two examined biomarkers, hair is more indicative for As than urine. Further fundamental studies are in progress on this topic in the study area.