

## Appraisal of Trace Elements in Scalp Hair of School Children in Kandal Province, Cambodia

**Authors :** Alireza Yavar, Sukiman Sarmani, Kok Siong Khoo

**Abstract :** Trace element analysis of human hair has the potential to disclose retroactive information about an individual's nutritional status and exposure. The residents of villages in Kandal province of Cambodia, due to dietary habits, lifestyle and ecological conditions, are unprotected from toxic elements particularly arsenic (As). The purpose of this research was to valuation levels of toxic and vital elements in scalp human hair. Scalp hair samples of 12-17 school children from three villages of Anglong Romiot (AR), Svay Romiot (SR) and Kampong Kong (KK) in the Kandal province of Cambodia were evaluated using k0- instrumental neutron activation method (k0-INAA). The samples were irradiated 6 hours in a Malaysian nuclear agency (MNA) research reactor and afterward, an HPGe detector was utilized to obtain gamma peaks of radionuclides in samples. We achieved profiles of 31 elements in human hair in our studied area, namely, As, Au, Br, Ca, Ce, Co, Dy, Eu152m, Hg197, Hg203, Ho, Ir, K, La, Lu, Mn, Na, Pa, Pt195m, Pt197, Sb, Sc46, Sc47, Sm, Sn117m, W181, W187, Yb169, Yb175, Zn and Zn69m. The precision of the method was assessed by evaluating ERM-DB001-human hair as certified reference materials (CRMs), and which experimental result of ERM-DB001 was consistent with certified values. Whereas Arsenic (As) pollution is major contamination in our studied area, correlation between the concentration of As and other elements were determined by Pearson's correlation test that it may be useful as a database source for toxic and essential elements in the hair of teenage individuals in our studied area

**Keywords :** scalp human hair, toxic and essential elements, Kandal province of Cambodia, k0- instrumental neutron activation method

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