ISEE 2023
KAOHSIUNG, TAIWAN

35th Annual Conference of the International Society for Environmental Epidemiology

September 17-21, 2023

Kaohsiung, Taiwan

Connecting the East and the West, One Health in One Planet

Abstract E-Book

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EP-014[Exposures » Food/nutrition]

Dietary exposure to cerium in a young (18-23 yrs-old) population in Leicester (England)

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BACKGROUND AND AIM:Although the use of cerium (Ce) is increasing in Europe due to its multiple applications, the risks derived from chronic exposures to Ce are currently not well stablished. To assess exposure to Ce in undergraduate students at De Montfort University (DMU, England) with a specific focus on food intake.
METHOD:Comprehensive nutrient intake was collected from 111 (20.45 ± 1.16 yrs-old; 33 male and 78 female) DMU students using a validated variant of the European Prospective Investigation into Cancer and Nutrition Norfolk Food Frequency Questionnaire (EPIC-Norfolk FFQ). Ce was analysed in scalp-hair voluntarily provided by 73 of these participants (58 female) by ICP-MS after appropriate removal of exogenous contamination. The limit of detection was 0.0125 µg/g. Data was processed with the statistical package 'NADA' freely available in R, as Ce was detected only in 21 hair samples.
RESULTS:The presence of Ce in hair did not show sex-dependency, possibly due to its low detection in hair from male participants [n=2; range=0.0203-0.1331, P95=0.0541, in µg/g]. Thus, Ce was detected in 19 female participants (median and IQR, in µg/g): [0.0068 (0.0026, 0.0179)]. Ce was positively correlated with alcohol ($r=0.3436$; $p<0.01$) and tea ($r=0.2440$; $p<0.05$) intake. However, alcohol (p-value=0.0686) and tea (p-value=0.3332) intake did not show differences due to sex in this group of the population observed after performing a Mann-Whitney U test study. Large market-based studies have reported that the highest concentrations of Ce are usually found in plant foods (vegetables, cereals, potatoes, beans). Meanwhile the intake of vegetables and pulses in the population studied did not show sex dependency, significant differences were detected in the intake of cereals (p-value=0.0016), although they were higher in male participants.
CONCLUSIONS:The levels of Ce found were lower than those reported in the literature, suggesting minor environmental exposure in the population monitored.

Keywords: Exposures, Food/nutrition, Cerium