

Evaluation of Toxic Elements in Thai Rice Samples

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Abstract : Toxic elements in rice samples are great concern in Thailand because rice (*Oryza sativa*) is a staple food for Thai people. Furthermore, rice is an economic crop of Thailand for export. In this study, the concentrations of arsenic (As), cadmium (Cd) and lead (Pb) in rice samples collected from the paddy fields in the northern, northeastern and southern regions of Thailand were determined by inductively coupled plasma mass spectrometry. The mean concentrations of As, Cd and Pb in 55 rice samples were 0.112 ± 0.056 , 0.029 ± 0.037 and 0.031 ± 0.033 mg kg⁻¹, respectively. All rice samples showed As, Cd and Pb lower than the limit data of Codex. The estimated daily intakes (EDIs) of As, Cd, and Pb from rice consumption were 0.026 ± 0.013 , 0.007 ± 0.009 and 0.007 ± 0.008 mg day⁻¹, respectively. The percentage contribution to Provisional Tolerable Weekly Intake (PTWI) values of As, Cd and Pb for Thai male (body weight of 69 kg) was 17.6%, 9.7%, and 2.9%, respectively, and for Thai female (body weight of 57 kg) was 21.3%, 11.7% and 3.5%, respectively. The findings indicated that all studied rice samples are safe for consumption.

Keywords : arsenic, cadmium, ICP-MS, lead, rice

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