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Quantification of heavy metals in some rice varieties of South Korea and Sri Lanka and assessment of potential health risks to human

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Asia is the biggest rice (*Oryza sativa*) producers and consumers among the global population. Arsenic, Lead and Cadmium are some toxic heavy metals mostly reported in the Asian rice. Heavy metals can affect human health and lead tonumerous health issues. Study was conducted to assess the heavy metal toxicity of rice obtained from Sri Lanka and South Korea. Five parboiled rice samples representing five different areas in South Korea and 13 rice varieties (SL1- Samba, SL2- Kekulu white, SL3- Kekulu white, SL4- Keeri samba, SL5- Samba, SL6- Nadu red, SL7- Kekulu red, SL8- Kekulu samba, SL9- Kalu heenati, SL10- Madathawalu, SL11- Suwandel, SL12- Pachchaperumal and SL13- Nadu white) from the North Central Province of Sri Lanka were tested for As, Pb and Cd. Rice samples were digested using the microwave digestion system and tested for heavy metals using Inductively Coupled Plasma Mass Spectrometry (ICP-MS). Concentrations of the three metals of all 18 samples were below than the maximum acceptable levels, As (700 ppb), Pb (200 ppb) and Cd (200 ppb). SL10 from Sri Lankan samples showed the maximum As level, 144.56 ppb while SL6 contained the maximum Pb level, 29.25 ppb and SL11 showed the maximum Cd level, 78.02 ppb. The potential health risk to human body was calculated based on the Provisional Tolerable Weekly Intake (PTWI) for different sampling regions separately. Acceptable Estimated Weekly Intake (EWI) values per capita of all the regions were lower than the actual weekly consumption. Hence the consumers are safe from As, Pb and Cd through consumption of rice from the tested areas.

Key words: *Rice, heavy metals, ICP-MS, PTWI*

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