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Bioaccumulation of heavy metals in *Nelumbo* (Nelum) and *Aponogeton* (Kekatiya)

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Certain aquatic macrophytes particularly *Nelumbo nucifera* (Nelum: Lotus) and *Aponogeton* sp. (Kekatiya) are consumed as vegetables in many parts of Sri Lanka. Bioaccumulation of some selected heavy metals in the above fresh water macrophytes were determined with respect to environmental pollution and food safety. Samples were collected in 8 times (n=3, per site, per sampling), from two lakes in Western province of Sri Lanka, namely Kimbulwila tank at Mapitigama and Thalangama Tank at Battaramulla. Plants were randomly handpicked from above sites and benthic sediment and water samples were also grabbed at the same time. Samples were subjected to wet ash acid digestion and Cd, Cr, Cu, Pb and Zn contents were determined by atomic absorption spectrometry. Graphite Furnace technique was used for Cd and Pb while others were tested with flame method.

Table: Mean heavy metal contents

Metal type	Kimbulwila – Mapitigama				Thalangama Tank			
	N	A	S	W	N	A	S	W
	mg kg ⁻¹	mg kg ⁻¹	mg kg ⁻¹	mg dm ⁻³	mg kg ⁻¹	mg kg ⁻¹	mg kg ⁻¹	mg dm ⁻³
Cd	0.04	0.10	0.27	0.00	0.02	0.12	0.20	0.00
Cr	6.77	8.60	10.48	0.19	4.39	2.95	17.25	0.18
Cu	2.65	1.94	5.51	0.01	0.65	0.83	8.47	0.01
Pb	0.97	0.78	3.02	0.01	0.87	1.02	3.15	0.02
Zn	6.58	6.82	16.72	0.01	5.72	4.25	17.26	0.00

(N = *Nelumbo*, A = *Aponogeton*, S = Sediment, W = Water)

All the metals tested were present in measurable amounts in both plant species. High metal contents were reported in benthic sediments. Samples of *Aponogeton* showed comparatively high Cd accumulation. Mean Cd contents in *Aponogeton* of both ecosystems were exceeded the maximum specified limit for Cd of leafy vegetables and fresh herbs in Australia New Zealand Food Standard code (i.e. 0.1 mg/kg). A comparatively high Cr contents were reported in all samples. Cr standard was not specified in the above and other food standards which were referred. Water in both sites contained exceedingly high Cr content compared to the Sri Lanka standards (SLS 614:1983), which gives the maximum Cr level of 0.05 mg L⁻¹. Cr contents reported for benthic sediments in above sites were higher than the specified soil screening limit of Environmental Protection Agency of USA (i.e. 2 mg / kg).