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Determination of the concentrations of Mercury, Lead and Arsenic in selected ayurveda medicine

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"*Buddharaja kalkaya*", "*Seetharama watee*" and "*Pushyanuga choornaya*" are orally administered Ayurveda medicines. These preparations are being used in Ayurveda to cure a number of disease conditions. These pharmaceuticals are formulated as a combination of plant materials and minerals such as *Sadilingam*, *Mayuratau*, *Haritala*, *Manoseela* and *Siwanguru* which are enriched with Mercury (Hg), Copper (Cu), Arsenic (As) and Iron (Fe). As these raw materials contain heavy metals, assurance of safety and quality of products are of utmost importance. Concentration of Cu and Fe in pharmaceutically prepared (at Gampaha Wickramarachchi Ayurveda Institute) and commercially available *Buddharaja kalkaya*, *Seetharama watee* and *Pushyanuga choornaya* have been determined and published previously. Determination of the concentration of Hg, As and Pb (lead) in commercially available *Buddharaja kalkaya*, *Seetharama watee*, *Pushyanuga choornaya* and pharmaceutically prepared drugs was carried out in this study. Pre preparation procedures for samples were carried out prior to the analysis. Hg, As and Pb concentrations were determined using Atomic Absorption Spectrophotometer (AAS). Hydride generation method was used for determination of Hg and As and flame AAS was used for determining Pb.

Mean concentrations of tested metals in commercially available and prepared drugs

Drug	Sample	Metal Concentration (mg/g)		
		Hg	As	Pb
<i>Buddaraja Kalkaya</i>	Commercial [†]	0.59±0.07	0.62±0.16	0.12±0.01
	Prepared	0.51±0.32	1.07±0.02	0.15±0.00
<i>Seetharama watee</i>	Commercial ^{**}	2.35±0.15	4.19±0.54	0.71±0.01
	Prepared	2.88±3.30	7.04±0.06	0.79±0.00
<i>Pushyanuga choornaya</i>	Commercial ^{***}	-	-	1.24±0.09
	Prepared	-	-	1.32±0.00

[†]N= 9; ^{**}N=5; ^{***}N=6

Results revealed that Hg and As concentrations of both samples of *Pushyanuga choornaya* were below the detectable level of AAS. According to the results obtained, and considering the daily dosage of medicine (*Buddaraja kalkaya* 500mg/day, *Seetharama watee* 500mg/day and *Pushyanuga choornaya* 5g/day) and toxic levels (Recommended Daily Allowance Hg 0.0035mg/kg/day, As 0.6mg/kg/day) of As and Hg, intake of these medicines in a medicinal dosage would not contribute to increase the level of these metals in the human body. However, Pb concentration of a daily dosage of *Pushyanuga choornaya* is higher than the WHO recommended level of intake (25 µg/kg BW) per day. Hence further investigations should be carried out to study the toxic effect and ways of decreasing the Pb in the *Pushyanuga choornaya*.

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