



Investigation of heavy metal contents in some selected ayurvedic drugs

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Abstract

The use of ayurvedic medicines is common in both adults and children and is increasing in many areas of the world and more famous in Sri Lanka. This study will discuss the risks of heavy metal poisoning associated with the use of ayurvedic medicines. Many ayurvedic medicines contain heavy metals, including lead, calcium, zinc, mercury, arsenic, and etc. There have been numerous reports of clinically significant heavy metal poisoning related to their use.

'Yougaraja guggulu', 'kaishora guggulu', 'buddharaja kalkaya', 'seetharama watee' and 'thalisadi 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. Determination of the concentration of Pb, Zn and Cd in commercially available 'yougaraja guggulu', 'kaishora guggulu', 'buddharaja kalkaya', 'seetharama watee' and 'thalisadi choornaya' was carried out in this study. Furthermore the effect of pH, temperature and time; on the amount of this heavy metals released were also determined in this study. Pre preparation procedures for samples were carried out prior to the analysis. Samples were followed the wet digestion method. Cd, Zn and Pb concentrations were determined using flame atomic absorption spectrophotometer (FAAS).

Results revealed that Pb, Cd and Zn concentrations of all samples are exceeding the WHO permissible limit. Furthermore the study found that the amount of heavy metals released increases with time and depends on the pH value of the media. The study shows that the amount released is around 80% compare to the total content under pH 1 and 37 °C which is similar to the human body conditions. According to the results obtained, and considering the daily dosage of medicine and toxic level of Pb (10 µg/g), intake of these medicines in a medicinal dosage would contribute to increase the level of Pb in human body. Especially the lead content in yougaraja was found to be 300 times greater than the WHO permissible limits. Cadmium content in thalisadiya, seetharama watee and yougaraja found to be greater than the WHO permissible limit. There were no permissible limit for zinc. However the study found that the above drugs contains a high amount of zinc which can leads for health problems.