ANALYSIS OF CADMIUM IN DRINKING WATER IN PADAVI SIRIPURA AREA AND MODIFICATION OF DIPHENYLTHIOCARBAZONE

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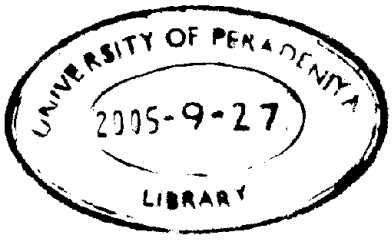

A significant increase in the number of patients with Chronic Renal Failure (CRF) in Padavi Sripura area in the North Central Province (NCP) of Sri Lanka has been reported. It was suspected that this was due to drinking of cadmium contaminated water because the symptoms were similar to that of cadmium poisoning. Analysis of water samples collected from Padavi Sripura area was carried out with a view to testing this proposition. An analysis using a Graphite Furnace Atomic Absorption Spectrometer (GFAAS) did not reveal the presence of cadmium in concentrations sufficient to pose a health hazard. However the effects of bioaccumulation have to be carefully investigated before a final conclusion is reached.

An attempt was made to develop a complexing agent for the determination of cadmium with improved sensitivity by chemically modifying diphenylthiocarbazone. Bamberger method and the Fischers method used for the synthesis of diphenylthiocarbazone were modified and used in order to synthesis di-(2,4-dinitrophenyl)thiocarbazone and di-(4-nitrophenylthiocabazone. However this part of the project could not be completed due to various constraints such as the nonavailability of the appropriate starting materials. The coupling reaction of the Bamberger method occurred smoothly to give 1,5-(4-nitro phenyl)nitroformazan in good yield but the conversion of 1,5-(4-nitrophenyl)nitroformazan to di-4-nitrophenylthiocarbazide with reducing agent, ammónium hydrogensulphide was found to be ineffective. First step of the modified Fischers method gave a product only in very small quantities. This may be due to the deactivating effect of the nitro functionality.