

**Abstract No: MP-02**

## **Degradation of selected pesticides in soil in selected areas in Medawachchiya and HPLC analysis of pesticides**

D. S. Dassanayake\* and R. C. L. De Silva

Department of Chemistry, Faculty of Science, University of Kelaniya, Sri Lanka  
\*dinuka1992dassanayake@gmail.com

It is known that diabetes, hypertension and different forms of glomerular nephritis are known etiologies of Chronic Kidney Disease (CKD). However, over the last two decades, a new strain of CKD known as Chronic Kidney Disease of unknown etiology (CKDu) has been endemic around the rural agricultural communities of the North Central Province of Sri Lanka. It is not related to a known cause commonly identified with CKD. Agrochemicals used is believed to be a cause of CKDu. Analysis of pesticide is often difficult due to interference and decomposition. Previous studies have noted that there were suspected peaks for 'Diazinon' and 'Profenofos' pesticides in the HPLC chromatograms of soil samples collected from Medawachchiya. Therefore, in order to test the presence of those pesticides in the ground, soil samples were collected and analyzed from selected cultivated areas of Medawachchiya were spiked with both Diazinon and Profenofos pesticides. Thirty representative soil samples (five samples per paddy field) were collected from six paddy fields from Karanbankulama Grama Niladhari division in Medawachchiya. Each soil sample was spiked with Profenofos ( $5.00 \text{ mg L}^{-1}$ ) and Diazinon ( $5.00 \text{ mg L}^{-1}$ ). Samples were digested using soxhlet extraction, from which the pesticide residues were extracted using solvent extraction. The extracts were analyzed through High Performance Liquid Chromatography (HPLC) analysis. Retention time of Diazinon at 5.89 minutes and that of Profenofos at 6.74 minutes and both peaks were detected throughout the study. When overlaid, the HPLC chromatograms of the non-spiked and spiked soil samples the same background peaks in non-spiked soil chromatogram were present in spiked soil chromatograms as well which resulted due to the common soil components retained in this soil. The results suggest presence of pesticide residue in the sample. The spiked pesticides are retained in soil samples throughout the study and the amount is decreased due to the degradation.

**Keywords:** Chronic Kidney Disease of unknown etiology, Pesticides ,HPLC

### **Acknowledgement**

This work was supported by university grants commission under the research grant RP/03/SR/02/06/01/2016.