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ENVIRONMENTAL POLLUTION IN WATER CONVOlVULUS CULTIVATED FIELD

MAY PYONE KYAW[1], THU THU MAUNG MAUNG NYUNT[1], SAGAWAH PHU[1], KHIN THIN YU[1], TIN TIN WIN SHWE[2], DAISUKE NAKAJIMA[2]

[1]Department of Biochemistry, University of Medicine 2, Yangon, Myanmar
[2]Center for Health and Environmental Risk Research, National Institute for Environmental Studies, Tsukuba, Japan
profmaypyonekyaw@gmail.com

INTRODUCTION

➢ Water convolvulus (Ipomoea aquatica) is a semi-aquatic green plant cultivated widely in many regions of Myanmar.

➢ It is widely consumed vegetable and grows in or near the domestic and other types of wastewater on moist soils.

➢ This water may contain nutrients but variety of pollutants including heavy metals cause a risk for consumers.

➢ Because food safety is major health concern, environmental pollution in farm land call a need for monitoring.

AIMS AND OBJECTIVES

➢ The aim of the present study was to assess the concentration of lead (Pb), cadmium (Cd) and arsenic (As) and other endocrine disrupting chemicals in water of water convolvulus cultivated farm.

MATERIALS AND METHODS

➢ Water samples were collected from three sites of cultivation farm of water convolvulus in North Okkalapa Township, Yangon, Myanmar.

➢ Endocrine disrupting chemicals were identified and quantified by automated identification and quantification database (AIQS-DB).

➢ The concentration of lead (Pb), cadmium (Cd) and arsenic (As) were measured by Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES).

Figure. Water samples and analysis by GC/MS and ICP-OES

RESULTS

Results of chemical analysis of water samples

By Rapid test kit method

Type of chemicals	Concentration (mg/L)
COD	8
NH_4^+	10
NO_2^+	0.005
NO_3^+	0.2
PO_4^{3-}	1

Analysis of Endocrine Disrupting Chemical in water sample By Gas chromatography/ mass spectrometry (GC/MS) and Quantified by automated identification and quantification database (AIQS-DB)

Type of endocrine disrupting chemicals	Concentration (ng/L)
p-t-Octylphenol	3
Bisphenol A	18.5

Isolation of bacteria from water sample

Type of bacteria	Concentration
E.coli and Coloniform	456
Total bacterial count and Coloniform	140

Concentration of Heavy metals in water samples

Type of heavy metals	Sample 1	Sample 2	Sample 3
Cadmium (ppb)	0.426	0.135	0.257
Lead (ppb)	0.108	0.1641	0.288
Arsenate (ppb)	ND	ND	ND

DISCUSSION AND CONCLUSION

➢ Cadmium and lead levels were found to be lowered than the recommended maximum concentration of trace elements in irrigation water by FAO.

➢ Water samples were taken from 3 separate fields which are away from industrial zones and this trivial contamination may be due to application of fertilizers, pesticides and wastewater irrigation.

➢ Xenoestrogenic compound, octylphenol were mostly observed in commercial and livestock sewages. These alkyl phenols could be emitted from old rubber tyre, dyestuffs, adhessive and fuel oil.

➢ The water samples were also found to be contaminated with Bisphenol A which are used to make hard plastic bottles.

➢ Therefore, the water sample in the water convolvulus fields have contaminated endocrine disrupting chemicals, E.coli and coliform bacteria.

➢ Therefore, farm workers and consumers should have awareness for the importance of clean and safe environment for water convolvulus fields.