

## Removal of Heavy Metal Ions from Aqueous Solutions via Adsorption onto local herbs consumed in Adamawa state, Nigeria

Nami Gaila\*

Federal Polytechnic Mubi, Adamawa State, Nigeria.

### Abstract

The quest for environmental protection have been growing during the past years. Efforts and research to reduce environmental pollution have been focused by the decrease of the pollutant effluents and/or treatment of pollutant effluents before their discharge from their sources. Traditional treatment methods for removing heavy metals from waste waters and food chain include chemical oxidation and reduction, chemical precipitation, membrane filtration, ion exchange and electrochemical processes. However, each of these methods has its own limitations and disadvantages which make each of them either economical or technically infeasible for heavy metal removal. Adsorption has been shown to be the most feasible method for the removal of heavy metals from diluted wastewater streams (Abu Al-Rub et al. 2002, 2003). This research is aimed at determining the heavy metal binding ability of the crude and insoluble dietary fibre of Spinous *Amarantus*(alayahon daji)(AA) *Senna accedentalis* (tasba)(TB), *Phyllantus niruri* (mace mai goyo)(MC), *Hibiscus sabdrariffa* (yakuwan daji)(YD) and *Leptadenia hastate* (yadiya)(YE) which are commonly consume in Adamawa state, Nigeria using AAS Method with a view to recommending them as biomaterials for the removal of heavy metals aqueous solution. All the crude samples showed significantly higher heavy metal ion ( $Cd^{2+}$ ,  $Cu^{2+}$  and  $Pb^{2+}$ ) binding ability than their respective insoluble dietary fiber (IDF), this is attributed to the chemical composition and structural properties of the crude samples and their IDF. The extraction process could increase the surface area of crude samples and thereby increasing their metal adsorption.

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### Biography:

Dr. Nami giala is working as Professor in Dept of Science Laboratory Tech., Federal Polytechnic Mubi, Adamawa State, Nigeria.