

# 琉球大学学術リポジトリ

## Metal Biosorption by Mangrove Leaves Biomass

メタデータ	言語: 出版者: 琉球大学21世紀COEプログラム 公開日: 2008-03-09 キーワード (Ja): キーワード (En): Biosorption, Mangrove, Metals, Rhizophora stylosa, Bruguiera gymnorhiza 作成者: Abdulkadir, Sakdullah, Tsuchiya, Makoto, 土屋, 誠 メールアドレス: 所属:
URL	<a href="http://hdl.handle.net/20.500.12000/4991">http://hdl.handle.net/20.500.12000/4991</a>

Sakdullah Abdulkadir and Makoto Tsuchiya

*Laboratory of Ecology and Systematics, Faculty of Science, University of the Ryukyus,  
Senbaru-1, Nishihara, Okinawa 903-0213, Japan*

#### ABSTRACT

Biosorption is the property of certain biomolecules (or types of biomass) to bind and concentrate selected ions or other molecules from aqueous solutions. Metal biosorption experiments with mangrove leaves, *Rhizophora stylosa* and *Bruguiera gymnorrhiza* were conducted using batch technique at room temperature 25°C. The tests were performed in 100 ml flasks containing 50 ml of heavy metal solutions (with different metal concentrations) and 4 g/L of mangrove leaves biomass with triplicates and blank controls. The objective of this study was to know the potential adsorption capacity of dead mangrove leaves for metal binding from aqueous medium.

The results showed that the metal adsorption by dead mangrove leaves increased with increasing metal concentrations. However, the metal removal rates from solutions decreased with increasing metal concentrations. Higher metal adsorption capacity was found for *B. gymnorrhiza* as compared to *R. stylosa*, with higher adsorption for lead (Pb) than copper (Cu). Using the Langmuir model the maximum adsorption capacity ( $Q_{\max}$ ) for metal binding can be predicted. The maximum adsorption capacity of *B. gymnorrhiza* and *R. stylosa* was 6.6 and 9.1 mg/g, and 4.2 and 7.8 mg/g for Cu and Pb, respectively.

*Keywords:* Biosorption, Mangrove, Metals, *Rhizophora stylosa*, *Bruguiera gymnorrhiza*