

# REMOVAL OF COPPER (II) IONS FROM AQUEOUS SOLUTIONS BY AN ISOLATED FUNGAL STRAIN FROM MANGROVE SOIL ENVIRONMENT IN THE SOUTHEAST BORNEO.

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## ABSTRACT

Heavy metal released into the environment is increasing continuously as an impact from industrialization and technological advancement. Industrial effluents containing heavy metals as well as the electronic wastes from various electrical and electronic industries contributed immensely to heavy metal pollution particularly Cu(II) ions. The use of biomaterials for removing heavy metals from contaminated soil and wastewater has emerged as a potential alternative method to the conventional techniques. The aim of this study is to isolate fungal strain capable of removing copper ions from aqueous solution. The study was able to isolate a fungal strain, identified as *Penicillium citrinum* UMAS B2 which showed an excellent potential for copper ion removal from aqueous solution. The uptake of Cu (II) ions was investigated and the biosorption experiments were carried out in batch mode. The experimental results showed that the maximum uptake of Cu (II) ions was obtained at pH 7 and temperature of 30<sup>0</sup> C. The maximum removal was obtained at 50mgL<sup>-1</sup> of metal concentration with uptake of 5.566±0.960 mg/L. The observation in this study showed that the newly isolated *Penicillium citrinum* UMAS B2 can be used as a biosorbent for an efficient removal of Cu(II) ions from aqueous solution.

Keywords: Biosorbent, copper, fungi, *Penicillium citrinum*

## INTRODUCTION

Copper is an essential micronutrient to living organisms, involved in biochemistry processes such as detoxification and oxidation, it is also known to be one of the heavy metals that is toxic to living organisms. Most copper containing compounds were commonly used as anti-microbial agents as well as feed additives. This is responsible for the elevated levels of copper as could be seen in waters and soils. In addition, many industrial wastes and acid