

**SYNTHESIS, CHARACTERIZATION AND ANTIMICROBIAL
STUDIES OF HYDROXAMIC ACID COMPLEXES**

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ABSTRACT

SYNTHESIS, CHARACTERIZATION AND ANTIMICROBIAL STUDIES OF HYDROXAMIC ACID COMPLEXES

Zinc and Copper(III) hydroxamate complexes are synthesized and characterized by elemental analysis, Fourier-transform infrared spectroscopy, conductivity and magnetic susceptibility measurements. The molecular compositions of the synthesized complexes are found to be ZnL_3 and CuL_2 , respectively. The antimicrobial activity of these complexes is determined by disc diffusion method against the target microorganisms - *Staphylococcus aureus*, Methicillin Resistant *Staphylococcus aureus*, *Escherichia coli* and *Aspergillus niger*. The antimicrobial activities of benzohydroxamic acid and its complexes were compared. It is observed that the ligand did not show any antibacterial activity. However, the inhibitive property against Methicillin Resistant *Staphylococcus aureus* is slightly seen upon complexation of benzohydroxamic acid with copper.

CHAPTER 1

INTRODUCTION

1.1 Background

The discovery of antibiotics by Fleming, Chain and Florey in the early 1990's was one of the greatest discoveries in modern medicine. Antibiotics have been able to stop growth or even kill different types of bacteria. However, they have shown to be more innovative and adaptive than what the microbiologists had expected. The development of resistance to antibiotics at an increasing pace is causing a problem. This problem arises from malpractices and mismanagement of dispensing these antibiotics (Cortes, 2006).

Antibiotic resistance is a biological response phenomenon of bacteria to be selective pressure of antibiotic. The infection that acquired by surroundings make bacteria becomes resistance. Bacteria also can be resistant because of the changes or adopt in a way that allow the bacteria survive in presence of antibiotic. Antibiotic resistance causes from the problem of the transferred among the bacteria that different ecological group. Resistance bacteria rapidly appear in the environment after using the antibiotic, but the bacteria are very slow to be lost in human body even