

**COMPLEXATION OF SCHIFF BASE LIGANDS: SYNTHESIS,
CHARACTERIZATION AND ANTIMICROBIAL STUDIES**

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ABSTRACT

COMPLEXATION OF SCHIFF BASE LIGANDS : SYNTHESIS, CHARACTERIZATION AND ANTIMICROBIAL STUDIES

Two new Schiff base ligands were prepared by condensation reaction of benzaldehyde or chlorobenzaldehyde with ethylenediamine in the 2:1 ratio. The two Schiff base ligands were obtained were N,N'-bis-(4-chloro-benzylidene)-ethane -1,2-diamine and N,N'-dibenzylidene-ethane-1,2-diamine. The Schiff base complexes of N,N'-bis-(4-chloro-benzylidene)-ethane-1,2-diamine with Ni(II), Cu(II) and Co(III) have been successfully prepared. The Schiff base complexes were prepared by the template method. Tentative structures are proposed for the ligands and complexes by elemental analysis, magnetic susceptibility, FTIR and ¹HNMR. The antibacterial and antifungal activities were studied using disc diffusion method against *Escherichia coli*, *Enterococcus faecalis* and *Candida albicans*, respectively. The metal complexes showed more inhibition compared to the ligands.

CHAPTER 1

INTRODUCTION

1.1 Background

A Schiff base contains a carbon nitrogen double bond functional group with the nitrogen atom connected to an aryl or alkyl but not hydrogen (McMurry, 2004). Schiff base has the general formula $R_1R_2C=N-R_3$, where R is a phenyl or alkyl group that makes a Schiff base a stable imine.

Schiff base complexes have been widely studied in the past few years. They become important in applications such as antimicrobial and reducing agent (Shakir et al., 2006), radiopharmaceuticals for cancer targeting, agrochemicals as model system for biological macromolecules, as catalysts and corrosion inhibitors (Habibi et al., 2006).

A Schiff base can act as a ligand. This means that it is an ion or molecule that can be bonded to a metal in a complex ion (a ligand acts as Lewis base). There are many types of ligand such as monodentate, bidentate and polydentate. The ligand can form complex.