

**SYNTHESIS, CHARACTERIZATION AND ANTIMICROBIAL
ACTIVITIES OF SOME AMINO ACIDS (LEUCINE, PHENYLALANINE
AND TYROSINE) SCHIFF BASES OF ACETYLACETONATE AND
THEIR Mn(II), Ni(II) AND Cu(II) COMPLEXES**

BY

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SPS/11/MCH/00059

**A DISSERTATION SUBMITTED TO THE DEPARTMENT OF PURE AND
INDUSTRIAL CHEMISTRY, FACULTY OF SCIENCE, BAYERO
UNIVERSITY, KANO. IN PARTIAL FULFILMENT OF THE
REQUIREMENT FOR THE AWARD OF MASTER OF SCIENCE (M.Sc)
DEGREE IN INORGANIC CHEMISTRY**

NOVEMBER, 2015

DECLARATION

I hereby declare that this work is the product of my own research efforts; undertaken under the supervision of Dr. IBRAHIM TAJO SIRAJ and has not been presented and will not be presented elsewhere for the award of a degree or certificate. All sources have been duly acknowledged.

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CERTIFICATION

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TABLE OF CONTENT

Title Page	
Declaration.....	i
Certification.....	ii
Approval Page.....	iii
Acknowledgement.....	iv
Dedication.....	v
Table of Content.....	vi
List of Tables.....	ix
List of Figures.....	x
List of Slides.....	xi
Abstract.....	xiii

CHAPTER ONE

1.0 Introduction.....	1
1.1 Amino Acid.....	1
1.2 Essential Amino Acids.....	3
1.3 Properties of Amino Acids.....	4
1.4 Amino Acids Synthesis.....	6
1.5 Reactions of Amino Acids.....	8
1.6 Acetylacetone.....	10
1.7 Schiff Base.....	12
1.8 Transition Metals.....	13
1.9 Coordination Chemistry.....	15

1.10 Aim and Objectives.....	16
------------------------------	----

CHAPTER TWO

2.0 Literature Review.....	17
----------------------------	----

CHAPTER THREE

3.0 Materials and Methods.....	23
3.1 Apparatus.....	23
3.2 Preparation of the Ligands.....	23
3.3 Preparation of the Complexes.....	24
3.4 Solubility Test for the Schiff Base Ligands and their Complexes.....	24
3.5 Molar Conductance Measurement of Schiff Base and their Complexes.....	24
3.6 Magnetic Susceptibility Measurement.....	25
3.7 Melting Point/ Decomposition Temperatures Determination.....	25
3.8 Determination of Metal to Ligand Ratio.....	26
3.9 Antibacterial Activity Test.....	26
3.10 Antifungal Activity Test.....	27

CHAPTER FOUR

4.0 Results and Discussion	
4.1 Results.....	28
4.2 Discussion.....	38

CHAPTER FIVE

5.0 Conclusion and Recommendations

5.1 Conclusion.....	47
---------------------	----

5.2 Recommendations.....	49
--------------------------	----

References.....	50
-----------------	----

Appendix

Calculation of the Percentage Yield of the Schiff bases.....	54
--	----

Calculation of the Percentage Yield of the Complexes.....	54
---	----

FT-IR Spectra.....	56
--------------------	----

UV-visible Results.....	62
-------------------------	----

LIST OF TABLES

Table 4.1: Physical Properties of Schiff bases and their Metal (II) Complexes.....	28
--	----

Table 4.2: Molar Conductivity test of Metal (II) Complexes.....	28
Table 4.3: Solubility test of Schiff bases and their Metal (II) Complexes.....	29
Table 4.4: Magnetic Susceptibility value of the Metal (II) Complexes.....	29
Table 4.5: IR Spectral Data for Schiff bases and their Metal (II) Complexes.....	30
Table 4.6A: Mole fraction of the ligand and absorbance values for Mn ²⁺ ion.....	30
Table 4.6B: Mole fraction of the ligand and absorbance values for Mn ²⁺ ion.....	31
Table 4.6C: Mole fraction of the ligand and absorbance values for Mn ²⁺ ion.....	31
Table 4.6D: Mole fraction of the ligand and absorbance values for Ni ²⁺ ion.....	32
Table 4.6E: Mole fraction of the ligand and absorbance values for Ni ²⁺ ion.....	32
Table 4.6F: Mole fraction of the ligand and absorbance values for Ni ²⁺ ion.....	33
Table 4.6G: Mole fraction of the ligand and absorbance values for Cu ²⁺ ion.....	33
Table 4.6H: Mole fraction of the ligand and absorbance values for Cu ²⁺ ion.....	34
Table 4.6I: Mole fraction of the ligand and absorbance values for Cu ²⁺ ion.....	34
Table 4.7A: Antibacterial activity of Schiff bases and their metal (II) complexes.....	35
Table 4.7B: Antibacterial activity of Schiff bases and their metal (II) complexes.....	36
Table 4.8: Antifungal activity of Schiff bases and their metal (II) complexes.....	37

LIST OF FIGURES

Fig. 5.1: Proposed Structure of the Schiff base.....	47
--	----

Fig. 5.2: Proposed Structure of the complexes (M= Mn^{2+} , Ni^{2+} and Cu^{2+}).....	48
Fig 5.1: Leucine-acetylacetonate Schiff base FT-IR Spectra.....	56
Fig 5.2: Leucine-acetylacetonate Schiff base Cu Complex FT-IR Spectra.....	56
Fig 5.3: Leucine-acetylacetonate Schiff base Ni Complex FT-IR Spectra.....	57
Fig 5.4: Leucine-acetylacetonate Schiff base Mn Complex FT-IR Spectra.....	57
Fig 5.5: Phenylalanine-acetylacetonate Schiff base FT-IR Spectra.....	58
Fig 5.6: Phenylalanine-acetylacetonate Schiff base Ni Complex FT-IR Spectra.....	58
Fig 5.7: Phenylalanine-acetylacetonate Schiff base Cu Complex FT-IR Spectra.....	59
Fig 5.8: Phenylalanine-acetylacetonate Schiff base Mn Complex FT-IR Spectra.....	59
Fig 5.9: Tyrosine-acetylacetonate Schiff base FT-IR Spectra.....	60
Fig 5.10: Tyrosine-acetylacetonate Schiff base Cu Complex FT-IR Spectra.....	60
Fig 5.11: Tyrosine-acetylacetonate Schiff base Ni Complex FT-IR Spectra.....	61
Fig 5.12: Tyrosine-acetylacetonate Schiff base Mn Complex FT-IR Spectra.....	61
Fig 5.12: Plot of Absorbance against Ligand (Leucine-acetylacetonate) Mole Fraction for Ni^{2+}	62
Fig 5.13: Plot of Absorbance against Ligand (Phenylalanine-acetylacetonate) Mole Fraction for Ni^{2+}	62
Fig 5.14: Plot of Absorbance against Ligand (Tyrosine-acetylacetonate) Mole Fraction for Ni^{2+}	63
Fig 5.15: Plot of Absorbance against Ligand (Leucine-acetylacetonate) Mole Fraction for Mn^{2+}	63
Fig 5.16: Plot of Absorbance against Ligand (Phenylalanine-acetylacetonate) Mole Fraction for Mn^{2+}	64

Fig 5.17: Plot of Absorbance against Ligand (Tyrosine-acetylacetonate) Mole Fraction for Mn^{2+}	64
Fig 5.18: Plot of Absorbance against Ligand (Leucine-acetylacetonate) Mole Fraction for Cu^{2+}	65
Fig 5.19: Plot of Absorbance against Ligand (Phenylalanine-acetylacetonate) Mole Fraction for Cu^{2+}	65
Fig 5.20: Plot of Absorbance against Ligand (Tyrosine-acetylacetonate) Mole Fraction for Cu^{2+}	66

LIST OF SLIDES

Slide 4.1: Antibacterial result against <i>Pseudomonas aeruginosa</i> with Leucine Schiff base Complex of Copper (II) ion.....	44
--	----

Slide 4.2: Antibacterial result against <i>Proteus mirabilis</i> with Leucine Schiff base Complex of Nickel (II) ion.....	44
Slide 4.3: Antibacterial result against <i>Staphylococcus aureus</i> with Leucine Schiff base Complex of Nickel (II) ion.....	45
Slide 4.4: Antibacterial result against <i>Escherichia coli</i> with Leucine Schiff base Complex of Copper (II) ion.....	45
Slide 4.5: Antifungal result against <i>Candida albicans</i> with Tyrosine Schiff base Complex of Copper (II) ion.....	46
Slide 4.6: Antifungal result against <i>Candida albicans</i> with Phenylalanine Schiff base Complex of Copper (II) ion.....	46

ABSTRACT

A series of Schiff-bases derived from amino acids and acetylacetone, and their Cu(II), Ni(II) and Mn(II) complexes were synthesized and characterized based on their melting point/decomposition temperature, solubility, molar conductance, magnetic and infrared analyses. Job's method of continuous variation revealed that all the metal complexes are in 1:2 Metal-Ligand ratios. Physical and analytical data suggest that the Schiff bases act as tridentate ligands towards metal ion via azomethine-N, deprotonated-O of carboxylic group and enolic-O group of acetylacetonate. All the complexes have low molar conductance value ($6.40\text{--}60.00\Omega^{-1}\text{cm}^2\text{mol}^{-1}$), indicating that they are non-electrolyte. The magnetic moment values (2.12–7.89B.M) show that all the metals ions in the complexes are paramagnetic in nature. The synthesized ligands and their respective metal complexes were screened for their antibacterial activity against *Staphylococcus aureus* (Gram-positive), *Escherichia coli*, *Proteus mirabilis*, *Pseudomonas aeruginosa* and *Klebsiella pneumoniae* (Gram-negative) bacterial strains and antifungal activity against *Candida albicans*, *Fusarium solani* and *Aspergillus fumigatus*. The results of these studies revealed that all the compounds and their metal complexes showed significant antibacterial and antifungal strength at high concentrations.

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TABLE OF CONTENT

Title Page	
Declaration.....	i
Certification.....	ii
Approval Page.....	iii
Acknowledgement.....	iv
Dedication.....	v
Table of Content.....	vi
List of Tables.....	ix
List of Figures.....	x
List of Slides.....	xi
Abstract.....	xiii

CHAPTER ONE

1.0 Introduction.....	1
1.1 Amino Acid.....	1
1.2 Essential Amino Acids.....	3
1.3 Properties of Amino Acids.....	4
1.4 Amino Acids Synthesis.....	6
1.5 Reactions of Amino Acids.....	8
1.6 Acetylacetone.....	10
1.7 Schiff Base.....	12
1.8 Transition Metals.....	13
1.9 Coordination Chemistry.....	15

1.10 Aim and Objectives.....	16
------------------------------	----

CHAPTER TWO

2.0 Literature Review.....	17
----------------------------	----

CHAPTER THREE

3.0 Materials and Methods.....	23
3.1 Apparatus.....	23
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3.3 Preparation of the Complexes.....	24
3.4 Solubility Test for the Schiff Base Ligands and their Complexes.....	24
3.5 Molar Conductance Measurement of Schiff Base and their Complexes.....	24
3.6 Magnetic Susceptibility Measurement.....	25
3.7 Melting Point/ Decomposition Temperatures Determination.....	25
3.8 Determination of Metal to Ligand Ratio.....	26
3.9 Antibacterial Activity Test.....	26
3.10 Antifungal Activity Test.....	27

CHAPTER FOUR

4.0 Results and Discussion	
4.1 Results.....	28
4.2 Discussion.....	38

CHAPTER FIVE

5.0 Conclusion and Recommendations

5.1 Conclusion.....	47
---------------------	----

5.2 Recommendations.....	49
--------------------------	----

References.....	50
-----------------	----

Appendix

Calculation of the Percentage Yield of the Schiff bases.....	54
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Calculation of the Percentage Yield of the Complexes.....	54
---	----

FT-IR Spectra.....	56
--------------------	----

UV-visible Results.....	62
-------------------------	----

LIST OF TABLES

Table 4.1: Physical Properties of Schiff bases and their Metal (II) Complexes.....	28
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Table 4.2: Molar Conductivity test of Metal (II) Complexes.....	28
Table 4.3: Solubility test of Schiff bases and their Metal (II) Complexes.....	29
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Table 4.5: IR Spectral Data for Schiff bases and their Metal (II) Complexes.....	30
Table 4.6A: Mole fraction of the ligand and absorbance values for Mn ²⁺ ion.....	30
Table 4.6B: Mole fraction of the ligand and absorbance values for Mn ²⁺ ion.....	31
Table 4.6C: Mole fraction of the ligand and absorbance values for Mn ²⁺ ion.....	31
Table 4.6D: Mole fraction of the ligand and absorbance values for Ni ²⁺ ion.....	32
Table 4.6E: Mole fraction of the ligand and absorbance values for Ni ²⁺ ion.....	32
Table 4.6F: Mole fraction of the ligand and absorbance values for Ni ²⁺ ion.....	33
Table 4.6G: Mole fraction of the ligand and absorbance values for Cu ²⁺ ion.....	33
Table 4.6H: Mole fraction of the ligand and absorbance values for Cu ²⁺ ion.....	34
Table 4.6I: Mole fraction of the ligand and absorbance values for Cu ²⁺ ion.....	34
Table 4.7A: Antibacterial activity of Schiff bases and their metal (II) complexes.....	35
Table 4.7B: Antibacterial activity of Schiff bases and their metal (II) complexes.....	36
Table 4.8: Antifungal activity of Schiff bases and their metal (II) complexes.....	37

LIST OF FIGURES

Fig. 5.1: Proposed Structure of the Schiff base.....	47
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Fig. 5.2: Proposed Structure of the complexes (M= Mn^{2+} , Ni^{2+} and Cu^{2+}).....	48
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Fig 5.2: Leucine-acetylacetonate Schiff base Cu Complex FT-IR Spectra.....	56
Fig 5.3: Leucine-acetylacetonate Schiff base Ni Complex FT-IR Spectra.....	57
Fig 5.4: Leucine-acetylacetonate Schiff base Mn Complex FT-IR Spectra.....	57
Fig 5.5: Phenylalanine-acetylacetonate Schiff base FT-IR Spectra.....	58
Fig 5.6: Phenylalanine-acetylacetonate Schiff base Ni Complex FT-IR Spectra.....	58
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Fig 5.9: Tyrosine-acetylacetonate Schiff base FT-IR Spectra.....	60
Fig 5.10: Tyrosine-acetylacetonate Schiff base Cu Complex FT-IR Spectra.....	60
Fig 5.11: Tyrosine-acetylacetonate Schiff base Ni Complex FT-IR Spectra.....	61
Fig 5.12: Tyrosine-acetylacetonate Schiff base Mn Complex FT-IR Spectra.....	61
Fig 5.12: Plot of Absorbance against Ligand (Leucine-acetylacetonate) Mole Fraction for Ni^{2+}	62
Fig 5.13: Plot of Absorbance against Ligand (Phenylalanine-acetylacetonate) Mole Fraction for Ni^{2+}	62
Fig 5.14: Plot of Absorbance against Ligand (Tyrosine-acetylacetonate) Mole Fraction for Ni^{2+}	63
Fig 5.15: Plot of Absorbance against Ligand (Leucine-acetylacetonate) Mole Fraction for Mn^{2+}	63
Fig 5.16: Plot of Absorbance against Ligand (Phenylalanine-acetylacetonate) Mole Fraction for Mn^{2+}	64

Fig 5.17: Plot of Absorbance against Ligand (Tyrosine-acetylacetonate) Mole Fraction for Mn^{2+}	64
Fig 5.18: Plot of Absorbance against Ligand (Leucine-acetylacetonate) Mole Fraction for Cu^{2+}	65
Fig 5.19: Plot of Absorbance against Ligand (Phenylalanine-acetylacetonate) Mole Fraction for Cu^{2+}	65
Fig 5.20: Plot of Absorbance against Ligand (Tyrosine-acetylacetonate) Mole Fraction for Cu^{2+}	66

LIST OF SLIDES

Slide 4.1: Antibacterial result against <i>Pseudomonas aeruginosa</i> with Leucine Schiff base Complex of Copper (II) ion.....	44
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Slide 4.2: Antibacterial result against <i>Proteus mirabilis</i> with Leucine Schiff base Complex of Nickel (II) ion.....	44
Slide 4.3: Antibacterial result against <i>Staphylococcus aureus</i> with Leucine Schiff base Complex of Nickel (II) ion.....	45
Slide 4.4: Antibacterial result against <i>Escherichia coli</i> with Leucine Schiff base Complex of Copper (II) ion.....	45
Slide 4.5: Antifungal result against <i>Candida albicans</i> with Tyrosine Schiff base Complex of Copper (II) ion.....	46
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