

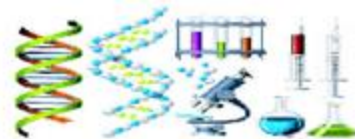
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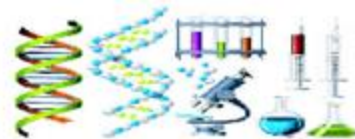


**Dr.Nagham Mahmood Aljamali,**

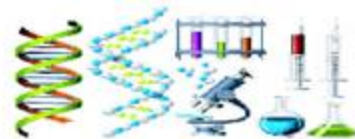
**Department of chemistry , Assistance professor.**

- **I have received Ph.D certificate in 2008 in organic chemistry.**
- **Assistance professor in 2011.**





- I have 35 published articles for organic chemistry , pharma , ansthesia , analytical , medical plants and plants extracted.
- Research field : Organic chemistry , Pharmaceutical chemistry , Medical plants , Analytical chemistry



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RESEARCH ARTICLE

# Synthesis and Investigation of Formazane compounds (Azo – Imine) and their complexes .

Dr. Nagham Mahmood Aljamali

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RESEARCH ARTICLE

## Synthesis and Investigation of Formazane compounds (Azo – Imine) and their complexes .

Dr. Nagham Mahmood Aljamali

Assist. Professor, Chem. Dept., Kufa Univ., Iraq.

\*Corresponding Author E-mail: [Dr.Nagham\\_mj@yahoo.com](mailto:Dr.Nagham_mj@yahoo.com)

### ABSTRACT:

Novel formazane ligands and their complexes with cadmium ion have been synthesized by the coupling reaction of azo or di azo compounds with imine compounds . the resulting compounds named (formazane), which included (azo group linked with imine group at same carbon atom of Schiff base .The structures of five ligands and complexes with Cd(II) were confirmed by several method like [FTIR –spectra , H.NMR–spectra , (C.H.N)–analysis (UV–Vis)–spectra, Atomic absorption, molar conductance melting points).

**KEY WORDS:** imine–azo, formazane, azomethine–azo ) complexes, Cd.

### INTRODUCTION:

Imine compounds (Schiff bases )consider starting material to synthesis several organic compounds like hetero cycles macro cycles, reagents in analytical chemistry, it also have biological importance in the metabolism and biosynthesis of amino acids, as a ligands in inorganic chemistry, their complexes have biological properties, like antifungal, antitumor, antibacterial, in other fields<sup>(1-6)</sup>.Azo compounds and their complexes also have a wide range of applications<sup>(7)</sup> that stretch from their use in analytical and inorganic chemistry with transition metals.

In the present work, we have synthesized five formazane<sup>(8)</sup> ligands and their complexes with cadmium ion (II) the presence of azo–group (–N=N–) linked with imine (–CH=N) group at same carbon atom of Schiff base makes them poly dentate ligands which gave them importance properties in the complexation.

### EXPERIMENTAL:

All measurement were carried out by : melting points in electro thermal 9300, LTD, U.K., FTIR in four ever transform infrared shimadzu 8300, KBr–disc, H.NMR–spectra in DMSO–solvent and (C.H.N)–analysis with Atomic absorption in Malaysia, molar conductance in DMSO –solvent, (UV–Vis)–spectrophotometer .

### Synthesis of ligand (BAD) :

**2-(S–benzothiadiazol azo )–2- (amine benzene )–phenyl imine .**  
A mixture of benzene acid (0.01mole) and thiosulfocarbazide (0.01mole) were reacted in refluxing for (8hrs), the resulting precipitate was amino compound, which dissolved in (2ml) of hydrochloric acid with (0.5gm) solution of sodium nitrite at (0–5)C, ethanolic solution of 2-amine benzene phenyl imine added to mixture to give 89% of ligand (BAD).

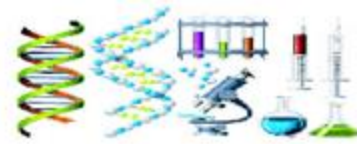
### Synthesis of ligand (HAD) :

**1, 1 –bis [2- hydroxyl phenyl (azo) –2- (phenyl) methylene di imine .**  
According to procedure<sup>(9, 10)</sup>, ethanolic mixture of (0.01mole) of methylene di amine with (0.02mole) from benzaldehyde were refluxed for (5hrs) in presence of drops from glacial acetic acid to produce precipitate of di imine compound, which (0.01mole) reacted with (0.02mole) of 2- hydroxyl benzene azo at (0–5)C, the precipitate was filtered and dried then re crystallized to yield 87% of ligand (HAD)

### Synthesis of ligand (HAP) :

**2- (2- hydroxyl phenyl azo )–2- (amino phenyl )– phenyl imine .**  
Equimolar mixture (0.01mole) of o- phenylene di amine and benzaldehyde were refluxed in presence of absolute ethanol for (2hrs), the resulting compound reacted with mixture of diazonium salt (0–5)C, to produce fromazane compound 87% of ligand (HAP).



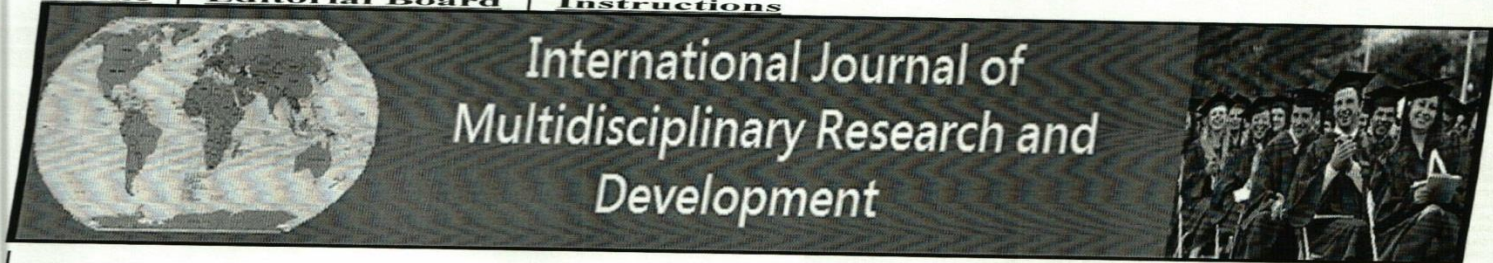


International Journal of Multidisciplinary Research and Development  
2014; 1( 2): 45-46

# Antimicrobial activity of Plants Oils

Dr. Nagham. Mahmood. Aljamali

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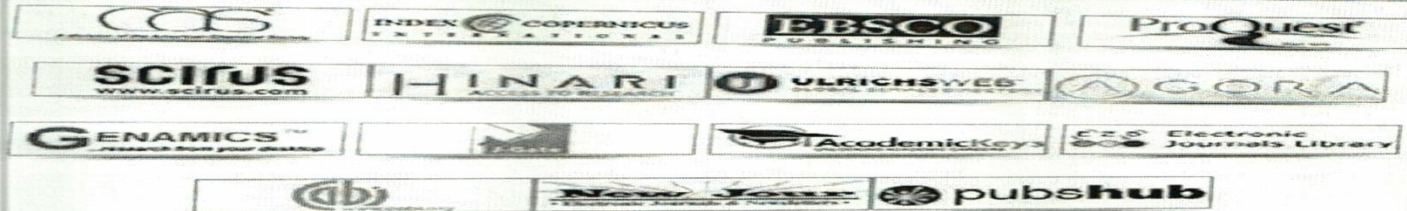


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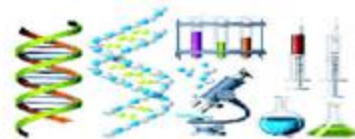
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World Journal of Pharmacy and Pharmaceutical Sciences.  
, 2014. Vol 3, Issue 6 ., Impact factor (2.76)

## SYNTHESIS OF VARIOUS –MEMBERED RINGS FROM (AZE-CYCLES)

Dr. Nigham Mahmood Aljamali

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د. نigham محمود

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### SYNTHESIS OF VARIOUS –MEMBERED RINGS FROM (AZE-CYCLES)

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Kufa Univ., Iraq.

#### ABSTRACT

Series compounds containing formazane & heterocyclic compounds (various membered ring) have been synthesized in present work . Some of these compound used imine & amino compounds as starting materials in their synthesis like compounds [1-4] to prepare cycles . This work involved , synthesis of oxazepine compounds [9] as (seven-membered ring) , which is used in synthesis of tri azecine compounds [10] as (eight-membered ring) , bi cyclic compounds [11] , di azepine compounds [12,13] , di azetidone-thione & di azirine as (four or (three-membered ring) linked . with di azepine (seven-ring) like compounds

[13 , 15] , formazane (azo -imine ) like compounds [6 , 22] . The structure of these compounds were characterized by (HNMR , FT-IR , CHN) –Techniques & their melting points.

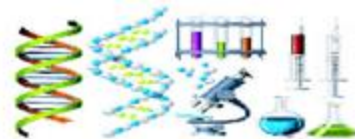
**KEYWORDS:** Various- membered, various rings , various cycles .

#### INTRODUCTION

A large number of heterocycles have been synthesized & studied for their interesting & important properties in a several fields<sup>(1-3)</sup> . Heterocyclic compounds are very widely distributed in nature & are essential to life in many applications<sup>(4,5)</sup> .

In this study , (three, Four, five ,six, seven, eight )-membered ring & bicyclic ring system containing at least two or more of different kinds of hetero atoms in ring (Sulfur , Nitrogen , Oxygen) . which have numerous pharmaceutical activities like antimicrobial<sup>(6)</sup> , antidiabetic , anticancer , antioxidant , treatment of various diseases<sup>(7,8)</sup> , some of them are used for thyroid drugs & leukemia , antihyperlipidemic activity , anti-HIV agents<sup>(9)</sup> & large number of





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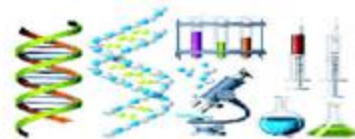
*Asian J. Research Chem. 7(8): August 2014; Page 702-710*

## Synthesis, Characterization and Study of Chromatography Behavior of Novel (Azo--Anil)-Heterocyclic Compounds

Dr. Nagham Mahmood Aljamali<sup>1</sup>



<sup>1</sup>Dr. Nagham Mahmood Aljamali



World Journal of Medicine and Medical Science Research

Vol. 2 (1), pp. 006-016, January 2014

**Synthesis and investigation of macro compounds via alkylation and azotation reaction**

**Dr. Nagham Mahmood Aljamali<sup>1</sup>**



Full Length Research Paper

## Synthesis and investigation of macro compounds via alkylation and azotation reactions

Nagham Mahmood Aljamali<sup>1\*</sup>, Radhiya A. Khdir and Haider Kareem Abd.

Chemistry Department, College of Education, Kufa University, Iraq

Accepted 28 January, 2014

This paper involved synthesis of series from macro compounds through reaction between di carbonyl compounds like (cyclo hexane-1,3-dione, 1,3-diphenyl-propadione, acetyl acetone, maleic anhydride, maleic acid, malonic acid) with di amine compounds or thiophene compound to produce compounds [1-5, 7, 8,11], which reacted with azo compound, benzaldehyde, via alkylation reaction and azotation reaction to yield compounds [6,9,10,12]. The structure of these compounds were characterized by (H-NMR, FT-IR, C,H,N-analysis) techniques and their melting points.

**Key words:** Macro compound, azotation, seven-membered, thiophene, diazepine, hydrazo.

### INTRODUCTION

Since macro compounds have a variety of potential, biological activities and utilities as technologically useful materials, a number of methods for the preparation have been developed. In this literature, macro compounds are described under different chemical names because of the differences in chemical terminology like (macro compounds, supra compound.).

Since the discovery of the microbial activity of macro compounds, several studies have been carried out in order to synthesize many derivatives of these compounds and their importance were reported as well. The macro compounds which contain thiophene nucleus have been reported to possess pharmacological biological important such as insecticide, acaricide, fungicidal, antibacterial and antihypertensive (Sukhbir et al., 2011; Yadav and Senthilkumar, 2011; Murug et al., 2013; Tomachyn et al., 2012), for this, several different methods have been

described for the synthesis of macro compounds including reaction of di carbonyl compounds such as (di ketone compounds, di carbonyl compounds, anhydrides) (Nagham 2013) with amine compounds to yield derivatives which react with thiophene nucleus to produce macro compounds and hetero cyclic macro compounds; most of the macro compounds included azo groups and amine groups which increased important properties (Tal et al., 2003; Sohrab et al., 2009; Fusco et al., 1979; Rada et al., 2013).

### EXPERIMENTAL

Melting points were determined in open capillary tube and were uncorrected. The FT-IR-spectra were recorded in KBr-disc, shimadzu (8300), (C,H,N)-elemental analysis and H-NMR-spectra in DMSO-solvent in Malaysia.

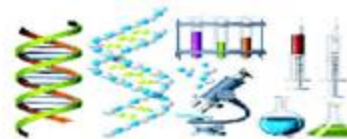
### Synthesis of compounds [1-4]

A mixture of thiophene(0.01 mole) and 1,3-dione

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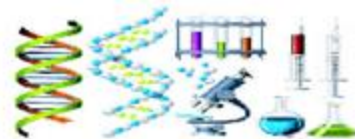
AMERICAN JOURNAL OF ADVANCED SCIENTIFIC RESEARCH

*Dr. Nagham .Mahmood .Al –Jamali,*

*Vol. 1, Issue. 5, pp. 240-244, 2012*

## Synthesis of Cyclic Compounds via Intermolecular Cycloaddition





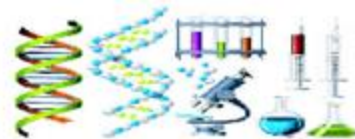
JOURNAL OF SCIENTIFIC & INNOVATIVE RESEARCH

## Preparation and Identification of Macrocycles of Oxazepine Compounds

Dr. Nagham Mahmood Aljamali\*

### ABSTRACT

A new type of macrocycles of oxazepine compounds have been prepared in this article , the macrocycles [3] has been linked with (maleic anhydride, phthalic anhydride ,3- nitro phthalic anhydride) to produce new type which are macrocycles oxazepine [4-6].



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## **Synthesis and bio-chemical investigation of series of Bis-(Aldamine-sugar)**

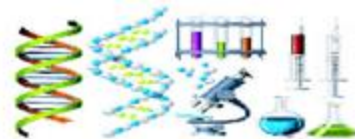
**Dr.Naghm Mahmood Aljamali\***

Chemistry Department, College Education for Women, Kufa University, Iraq.

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**The synthesized compounds in our work are calss of heterocyclic compounds in organic synthetic. In the present study, series of various organic compounds [1-11] were synthesized from anil –arabinose compound, which contain two imine –groups can be react as starting material with other compounds (sodium azide, chloro acetyl chloride, azo compound, thiol, secondary amine, maleic anhydride, primary amine) to produce cyclic and open cyclic compounds from (azitidine , form azane , diazepine , thiazine , diazane , sulfide). This work involved cyclization of imine group in some imine –sugar compounds to heterocyclic compounds several steps such as (condensation, alkylation, addition reactions**





# Synthesis of Heterocyclic Compounds for Chromatography Applications

Dr. Nagham Mahmood . Aljamali



# Biochemistry and Analytical Biochemistry

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