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شبكة المعلومات الجامعية



شبكة المعلومات الجامعية

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بالرسالة صفحات

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B1. VII

A THESIS ENTITLED

**SYNTHESIS AND REACTIONS OF SOME NEW
HETEROCYCLIC COMPOUNDS CONTAINING N
AND/OR S OF EXPECTED BIOLOGICAL
ACTIVITIES**

PRESENTED

BY

MAHMOUD NASR EL-DEEN MAHMOUD GOUDA
(B.Sc., 1996)

FOR PARTIAL FULFILMENT OF THE DEGREE OF M. Sc.
(ORGANIC CHEMISTRY)

**CHEMISTRY DEPARTMENT
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APPROVAL SHEET FOR SUBMISSION

TITLE OF M. Sc.
THESIS

SYNTHESIS AND REACTIONS OF SOME NEW
HETEROCYCLIC COMPOUNDS CONTAINING N
AND/OR S OF EXPECTED BIOLOGICAL
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ABSTRACT

Name : Mahmoud Nasr El Deen Mahmoud Gouda

Title : Synthesis and Reactions of Some New Heterocyclic Compounds Containing N and/or S of Expected Biological Activities.

Degree : M. Sc. Thesis, Chemistry Department, Faculty of Science, Cairo University.

This work has been carried out to investigate the chemical reactivity and synthetic potentiality of 2-thioxohydropyridines **6a-c** via their reactions with several active halogen-containing compounds to afford the corresponding 2-alkylthiopyridines in some cases and thieno [2, 3-b] pyridines in most cases. Thieno [2, 3-b] pyridine-2-carbohydrazides obtained through the reactions of 2-ethoxycarbonylthienopyridines with hydrazine hydrate which in turn, used to obtain the corresponding pyrimidinones and oxadiazoles. 3-Aminopyrazolopyridines obtained via the reactions of **6a-c** with hydrazine hydrate and the diazonium salt of **6a** prepared and coupled with several active-hydrogen containing reagents to give the corresponding triazines. Structures of all newly synthesized heterocyclic compounds were established by considering the data of both spectroscopic and elemental analyses.

Key Words: 2-Cyanoethanethioamide, 2-Thioxohydropyridines, 2-Alkylthiopyridines, Haloalkanes, Thienopyridines, Thiopyranopyridines, Thienopyridine-2-carbohydrazides, Formamide and Triazines.

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To

My Father

My Mother

My Wife

My Son

Dr. Rokia Yousef Saleh

Who Gave Me Help and Support

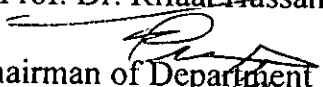
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M.Sc. Courses Studied by the candidates

Besides the work presented in this thesis, the candidate has attended passed successfully the following post-graduate courses as a partial fulfillment of the requirements for the degree of science.

- 1) Heterocyclic Chemistry
- 2) Advanced Physical Organic Chemistry
- 3) Photochemistry
- 4) Polymer Chemistry
- 5) Designing Organic Chemistry
- 6) Biochemistry
- 7) Natural Product
- 8) Applied Spectroscopy
- 9) Pericyclic Reactions
- 10) Organic Microanalysis
- 11) New Trends in Analytical Chemistry
- 12) Instrumental Analysis
- 13) Quantum Chemistry
- 14) Selected Topics
- 15) Mathematics and Scientific Compounds
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AIM OF THE PRESENT WORK

The present work aimed and was designed to fulfill the following objectives:

- 1- Continuation of the effort done by this group of research at Cairo University in the field of synthesis of heterocyclic derivatives of expected biological and medicinal activities.
- 2- Synthesis of several new heterocyclic derivatives containing nitrogen and / or sulphur using the laboratory available chemicals and reagents.
- 3- Establishment of the structures of the newly synthesized heterocyclic compounds by considering the data of TLC, IR, ¹H-NMR, mass spectra and the elemental analyses.
- 4- Synthesis of some of these heterocyclic derivatives via alternative routes which was also used as a tool to confirm the structures of the newly synthesized heterocyclic derivatives.
- 5- Study of the most probable mechanisms leading to the formation of the obtained heterocyclic products and comparison of our results with others of similar ring systems.

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“I do thank God for all gifts He gave Me”

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Mahmoud N. M. Gouda

SUMMARY OF THE ORIGINAL WORK

SUMMARY OF THE ORIGINAL WORK

The following is the summary of the original work investigated and included in the present thesis:

- 1- The starting materials of the present study were synthesized by reacting 2-cyanoethanethioamide (**1**) with each of 1,3-diarylprop-2-en-1-ones **2a-c** to give the corresponding 2-thioxohydropyridine-3-carbonitriles **6a-c**. Compounds **6a-c** used as good starting materials of the present study (cf. chart 1).
- 2- Compounds **6a-c** reacted with active halogen containing compounds **7a-d** in basic medium to afford the corresponding 2-alkylthioderivatives **8f,j,k** which cyclized to their corresponding thieno[2,3-b]pyridines **9f,j,k** in some cases while in most cases the corresponding thieno[2,3-b]pyridines **9a-e,g-i,l** obtained without isolation of their corresponding 2-alkylthio derivatives (cf. Chart 2).
- 3- On the other hand, compounds **6a-c** reacted with chloroacetyl chloride **7e** to give the corresponding SCOCH_2Cl derivatives **8m-o** which cyclized in basic medium to afford the corresponding thiopyranopyridines **9m-o** (cf. Chart 3).