



Ain Shams University
Faculty of Education
Department of Chemistry

Synthesis and biological evaluations of some novel phosphorus compounds containing chromene ring

A thesis submitted

By

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For in partial fulfillment for requirements of MSc Degree of
Teacher's Preparation in Science (Organic Chemistry)

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Ain Shams University
Faculty of Education
Department of Chemistry

Approval Sheet

Synthesis and biological evaluations of some novel phosphorus compounds containing chromene ring

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Higher studies:

The thesis was approved

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

((قُلْ هَلْ يَسْتَوِي الَّذِينَ يَغْلُمُونَ
وَالَّذِينَ لَا يَغْلُمُونَ ۖ إِنَّمَا يَتَذَكَّرُ
أُولُو الْأَلْبَابِ))

Dedication

To my parent

To my husband

To my children

And

To my lovers

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Noha M. Hassanin

The candidate has successfully passed examinations in the following topics in the post graduate studies

I) Topics of General Diploma for Teacher's Preparation in Science (Chemistry):

Organic Chemistry 1

- (A) Natural Products
- (B) Polymer Chemistry

Organic Chemistry 2

- (A) Reaction Mechanism
- (B) Stereochemistry

Physical Chemistry 1

- (A) Catalysis Chemistry
- (B) Electrochemistry

Physical Chemistry 2

- Quantum Chemistry

Inorganic Chemistry 1

- Polarography

Inorganic Chemistry 2

- Organometallic Compounds

Inorganic Chemistry 3

- Solutions

Inorganic Chemistry 4

- Metal Chelates

مقرر تربوي 1

مقرر تربوي 2

English Language

**II) Topics of Special Diploma for Teacher's Preparation in Science
(Organic Chemistry)**

Organic Chemistry 1

Spectroscopy I: IR, UV and Mass Spectrometry

Organic Chemistry 2

Spectroscopy II: NMR Spectrometry

Organic Chemistry 3

Heterocyclic Chemistry

Organic Chemistry 4

Selected Topics: Aromaticity, Delocalized Chemical bonding, and
Aromatic Nucleophilic Substitution

Organic Chemistry 5

Stereochemistry

Organic Chemistry 6

Organic Reactions

Organic Chemistry 7

Free Radicals Reactions

Organic Chemistry 8

(A) Sulfur and Phosphorous Compounds

(B) Organic Analytical Chemistry

Organic Chemistry 9

Review Article

مقرر تربوي 1

مقرر تربوي 2

English Language

**III) Topics of Master for Teacher's Preparation in Science (Organic
Chemistry)**

Organic Chemistry 1

Physical-organic chemistry

Organic Chemistry 2

(A) Microanalysis

(B) Modern organic Synthesis

Organic Chemistry 3

Advanced Organic Spectroscopy

Organic Chemistry 4

Pericyclic reactions

مقرر تربوي 1

مقرر تربوي 2

كفاءة لغوية

English Language

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