hossam maghraby

شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

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شبكة المعلومات الجامعية

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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التوثيق الإلكتروني والميكروفيلم

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بالرسالة صفحات لم ترد بالأصل

Utility of Phosphoranes In Heterocyclic Synthesis. Studies on Their Behaviour As Pesticides

A Thesis

Submitted in Fulfillment of the Requirements

Degree of Ph.D. for the

Organic Chemistry

Presented By

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Submitted to

Department of Chemistry

Faculty of Science

Cairo University

Giza, Egypt

2001

APPROVAL SHEET FOR SUBMISSION

Title of [Ph.D.] Thesis : **Utility of phosphoranes in heterocyclic synthesis. Studies on their behaviour as pesticides.**

Name of candidate : Shereen Abo El Magd Abdel Aziz

This thesis has been approved for submission by the supervisors:

1- Prof. Dr. Ayman Wahba Erian
Signature :

2- Prof. Dr. Mohamed Abdel Razik el Sayed
Signature :

Prof. Dr. Sadek E. Abdou
Chairman Of Chemistry Department
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ABSTRACT

Name : Shereen Abo El Magd Abdel Aziz

Title of thesis : Utility of phosphoranes in heterocyclic synthesis. Studies on their behaviour as pesticides.

Degree : (Ph.D) Thesis, Faculty of science, Cairo university . 1999-2000

This work has been carried out to investigate the studies the behaviour of aryllidene barbituric acid and cyclohexadione deriratives to wards tris (dimethyl amino) phosphine.

It was found that the arylidene barbiturates do not have any effect on *S. littoralis* but they have low and moderate activity on *Aphis craccivora* . Morover, we studied phosphorus insecticides (Fenitrothion, Fenthion, Formothion, and Malathion) on Guava fruits and the effect of heat and UV on these insecticides.

Key words: Tris (dimethyl amino) phosphine,Phenyl arylidene barbituric acid, Dioxyxanthenes & Aphis craccivora & Guava fruits & agrochemicals & Fenitrothion & Fenthion & Formothion & Malathion.

Supervisors : Prof. Dr. Ayman Wahba Erian

Prof. Dr. Mohamed Abdel Razik El Sayed

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Many thanks to all members of the staff and colleagues in the chemistry department, Cairo University and in the Central Agricultural Pesticides Laboratory, Agricultural Researcher Center, Dokki, Giza.

To my mother , To my great husband, To my all Family.

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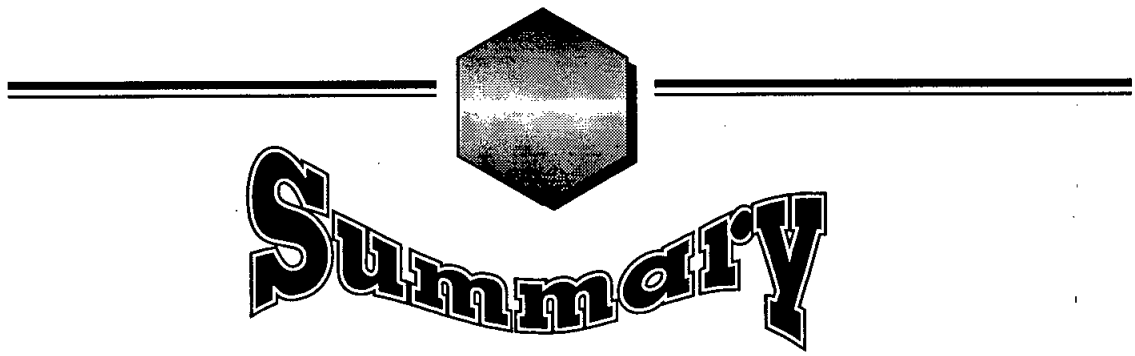
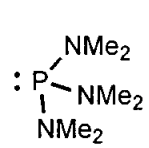

Summary

SUMMARY

Utility of Phosphoranes In Heterocyclic Synthesis. Studies on Their Behaviour As Pesticides

1) The Behaviour of Arylidene Barbituric Acid and Cyclohexadione Derivatives Towards Tris(dimethylamino)phosphine

Tris(dimethylamino)phosphine **1** reacted with phenylarylidene barbituric acids **4** to yield the triaminophosphonium dipolar ion adduct **7**. 2-Arylidenecyclohexan-1,3-dione **5** and 2-arylidene-5,5-dimethylcyclohexane-1,3-diones 6 reacted with phosphine **1** to produce the dioxyxanthenes **10** and **12**, respectively. We obtained also compounds having the phosphonium dipolar ion structure **2** and/or compounds having cyclic phospholene structure **3**. We have now investigated the reactions of tris(dimethylamino)phosphine **1** with arylidene barbituric acids **4**, 2-arylidenecyclohexan-1,3-dione **5** and 2-arylidenedimedones **6**.



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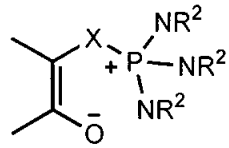

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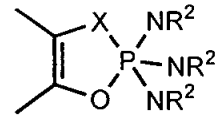
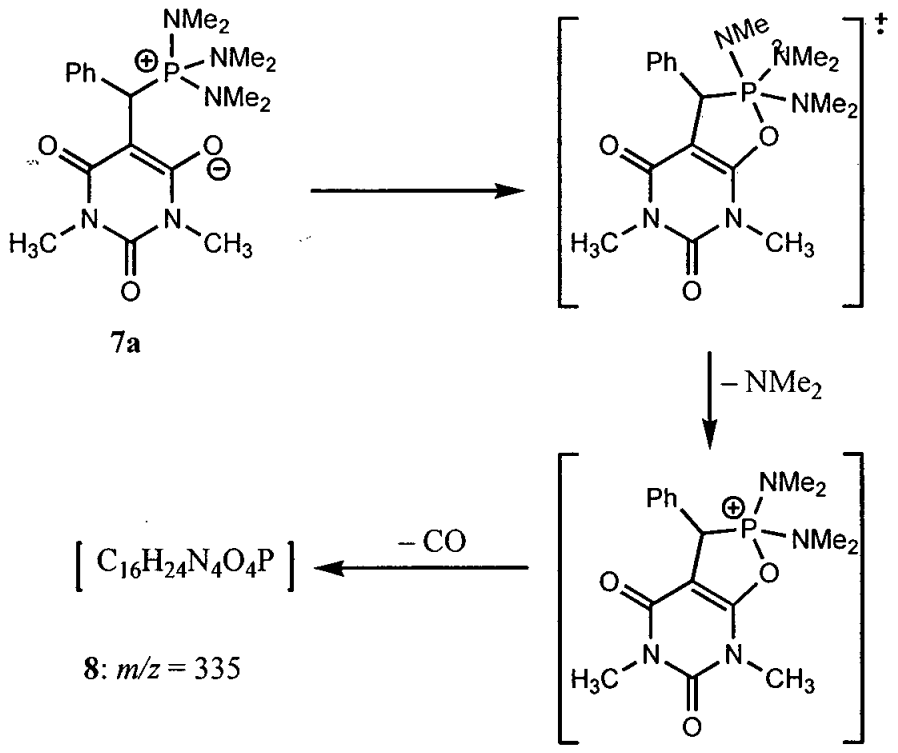


3

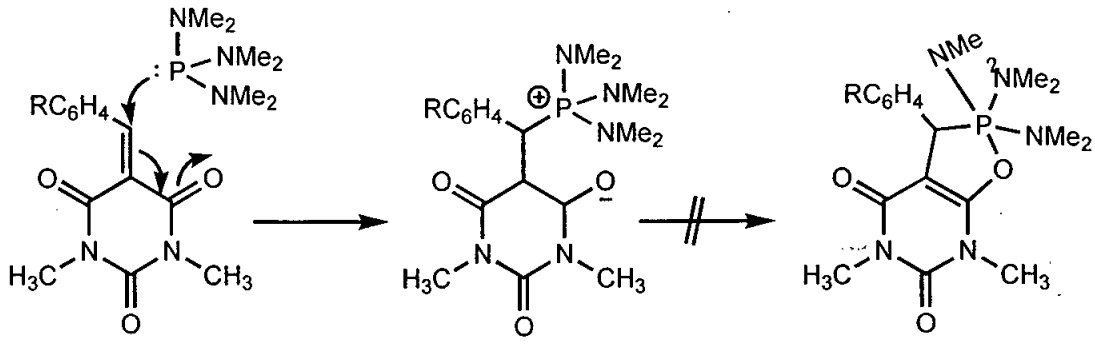
X = NH, NOH, $C(CN)_2$
R = CH_3



Scheme 1

Similarly, the reaction of compound **4b** with tris(dimethyl-amino)phosphine **1** proceeded in dry benzene at room temperature to give mainly 1:1 adduct of the aminophosphonium dipolar ion structure **7b**. This is based on analytical and spectroscopic evidences.

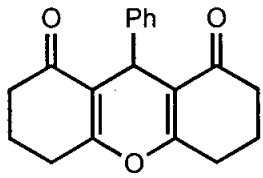
Our results ruled out the possibility of the formation of compounds having the cyclic structure **9**



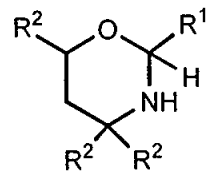
4 7a 9

Scheme 2

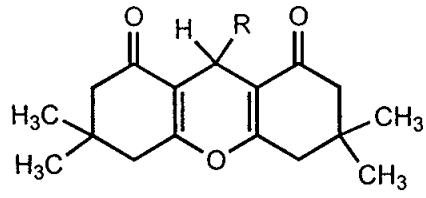
Next, we have investigated the behaviour of 2-phenylarylidene-1,3-cyclohexanedione **6** towards **1**. The reaction proceeded in benzene at room temperature whereby 1,8-dioxo-9-phenyl-1,2,3,4,5,6,7,8-octahydroxanthene **10** was formed in a high yield (98%).



10



11: $R^1 = C_6H_5$, $R^2 = H$



12a, R = H
b, R = Cl-*p*
c, R = NO_2-*p*