World Journal of Pharmaceutical Sciences
ISSN (Print): 2321-3310; ISSN (Online): 2321-3086
Published by Atom and Cell Publishers
Available online at: http://www.wjpsonline.com/
Short Communication

Synthesis of oxazipen compounds via Schiff bases

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Received: 11-10-2013 / Revised: 14-10-2013 / Accepted: 20-10-2013

ABSTRACT

This work involved preparation of cyclic compounds are containing of more than one hetero atoms in their structures like (N)-nitrogen atom. A seven-member ring compounds were prepared by condensation of N,N-di methyl amino benzaldehyde with aromatic amines to give compounds [N_2-N_{17}], these compounds were found to react with maleic anhydride to give 7-memberd ring [N_{18}-N_{32}]. All these compounds [N_{2-} N_{32}] were prepared by pericyclic reactions.

Key words: cyclization, fused of anhydride, Chemistry, Schiff's base

INTRODUCTION

A seven-membered ring have reviewed cyclo addition reaction of alkenes, the cyclic transition state must correspond to one arrangement of the participating orbital's that can maintain a bonding interaction between the reaction components [1,2]. Peri-cyclic reaction is one step-process , take place through a single transition state (T.S) with relatively high yield and frequently no side reaction . There are many reactions in organic chemistry that give no evidence of involving intermediates when they are subjected to the usual probes employed for studying reaction mechanisms[3-10].

A pericyclic reaction were very puzzling to chemist because they are generally not sensitive to any kind of catalyst or to a change in solvent that involves the cyclization of a conjugated polyne . One π–bond is broken, the other π –bond change position , a new σ-bond is formed and a cyclic compound results. synthesis of these compounds in this work is a class of a pericyclic reaction which is classified as a 5+2→7, implying 5-atom component plus 2-atom component leading to 7- memberd cyclic ring [11-20].

EXPERIMENTAL

All chemicals used were supplied from Merck and BDH-chemical Company.
All measurements were carried out by:-
Melting points: Electrothermal 9300, melting point Engineering LTD,U.K
FI-IR spectra: Fourrier transform infrared shimadzu (8300) (FI-IR), Kbr disc was performed by Co. S. Q. Iraq.
Elemental Analysis (C. H. N): EA-017 mth in center Lab- Institute of Earth and Environmental science, Al-byat University Jordon.
UV-Visble spectra: Shimadzu-1700, double beam with computerized, Japan.
HNMR spectra: in center Lab-Institute of Earth and Environmental Science, Al-byat University Jordan.

Synthetic Methods:

Synthesis of p-N,N-dimethyl amine benzylidene arene amino (Schiff's bases) [N_2-N_{17}]
General procedure[6,11,13]: A mixture of equimolar amounts (0.05 mole , 6.30 ml) of p-N,N-dimethyl amino benzaldehyde [N_1] and primary aromatic amine dissolved in (50 ml) of absolute ethanol with

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some drops of acetic acid was refluxed for (3 hrs) . The reaction mixture was then allowed to cool to room temperature and solid product was filtered and recrystallized from ethanol to give colored crystals from compounds *[N_2-N_{17}]*

Synthesis of 2-(p-N.N-dimethyl amino benzyl)-3-aryl-2,3-dihydro [1,3]-oxazepine-4-7-diones.(Oxazepine derivatives) [N_{18}-N_{33}] .

General procedure [11,12,18]*:* A mixture of equimolar amounts (0.02 mole) of schiff's bases [N_2-N_{17}] and maleic anhydride in dry benzene was refluxed for (4-5 hrs) , the solvent was removed and the resulting colored crystalline solid was recrystallized from dry 1,4-dioxane to give the title products of compounds *[N_{18}-N_{33}]*.

RESULTS AND DISCUSSION

The reaction of any anhydride with anil compounds are classified as a[5+2=7] ,5-atom component plus 2-atom component leading to 7-memberd ring, the pericyclic reactions in this work involves synthesis of compounds by condensation with aromatic amines to give Schiff's base [*[N_2-N_{17}]*] according to well-known procedure[6,11,18]). Compounds [*N_2-N_{17}*] react with maleic anhydride to produce 7-memberd hetero cyclic compounds [*N_{18}-N_{33}*] of oxazepine. Synthesized compounds [*N_2- N_{33}*] have been characterized by their melting point and spectroscopic methods (UV-Visble , FT.IR , H.NMR spectrum , and (C. H. N)-analysis) .

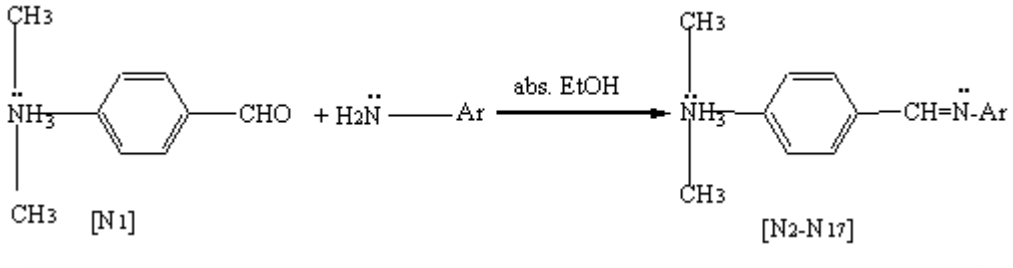
H.NMR-spectrum: H.NMR-spectrum of compound [*N_2- N_{33}*] shown: singlet signal at δ 9.92-9.97 for one proton of anil group[7,11] (-CH=N) in compound [*N_2-N_{17}*] ,singlet signal at δ 10.2 that could be attributed to the proton[11,18] of oxazepine (O-CH-N) group in compound [*N_{18}-N_{33}*] ,and other peaks .

FT.IR spectra: FT.IR-showed appearance band at (1620-1640)cm^- due to imine[20,21] group (C=N) of compounds [*N_2- N_{33}*],while this band is disappear and two bands are appear at (1700,1670) cm^{-1} due to[11,12] (lactone/lactam) group of oxazepine compounds [*N_{18}-N_{33}*], this evidence to formation of compounds [*N_2- N_{33}*] . Other data of functional groups shown in the following, Table (1) .

UV-spectra & (C. H. N)-Analysis: UV spectra, most of compounds have electron transition (n-π) due to[6,22] the hetro atoms (O,N) in these compounds beside of transition (π-π) of conjugated system. the UV-spectra of compounds how Uv-Vis spectrum Table (3) of compounds [N_{18}-N_{33}] , showed the absorbance bands data were appeared at (λ_{max} = 315 - 400 nm) [6,11], these compounds have chromophore group with oxochromic group due to hyperchromic effect such as conjugated system and carbonyl group in oxazepine compound with (-OH) group as oxochromic group of compound [N_{18}] , (iodine) in compound [N_{19}] , (-NH-CO-) group in compound [N_{20},N_{32}], (C=N) , (C-S) in compound [N_{22} , N_{23}, N_{25}] , (-N=C-N=) group in compounds [N_{24} ,N_{32} , N_{33}] , (-NO_2) group in compound [N_{21}] , (COOH) groups in compounds [N_{26}-N_{29}] , for this reason , the bands shift to the maximum wave length data for compounds [N_{18}-N_{33}] are listed in Table (3) .

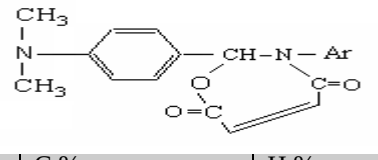
ACKNOWLEDGEMENT

I would like to express my thanks to Mr. Audai .S in center Lab-Institute of Earth and Environmental science-Al-Bayt University H.J.K in Jordan for providing C.H.N element analytical, H.NMR-spectrum.



[N_{18}-N_{33}]

Table (1) – C.H.N. – analysis data of 1,3-oxazepine compounds



Comp.No.	M.F	C %	H %	N %
N_{18}	$C_{19}H_{18}N_2O_4$	Calc. 67.45 Found. 67.21	5.32 5.11	8.28 8.07
N_{24}	$C_{17}H_{16}N_4O_3$	Calc. 62.96 Found. 62.71	4.93 4.57	17.44 17.31
N_{31}	$C_{22}H_{19}N_3O_3$	Calc. 70.77 Found. 70.34	5.09 4.89	11.26 11.04

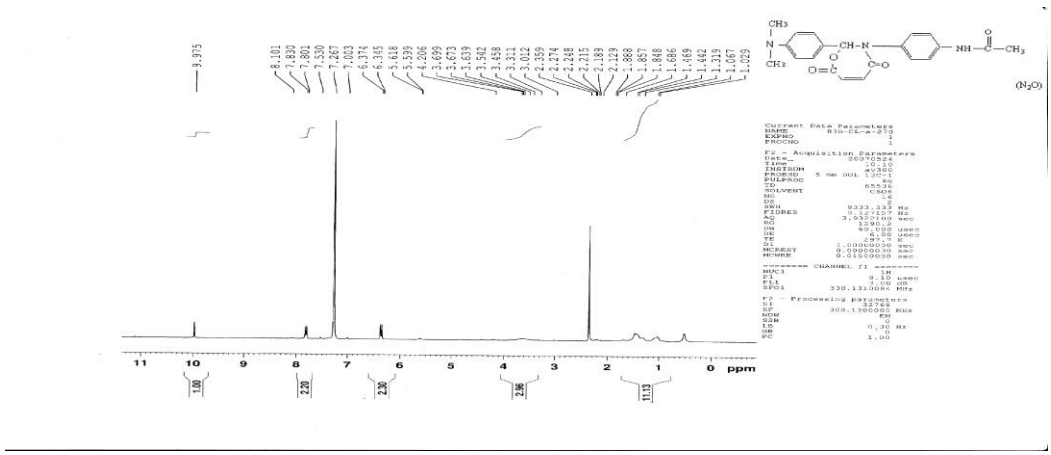


Figure (1) H-NMR spectrum of compound [N_{20}]

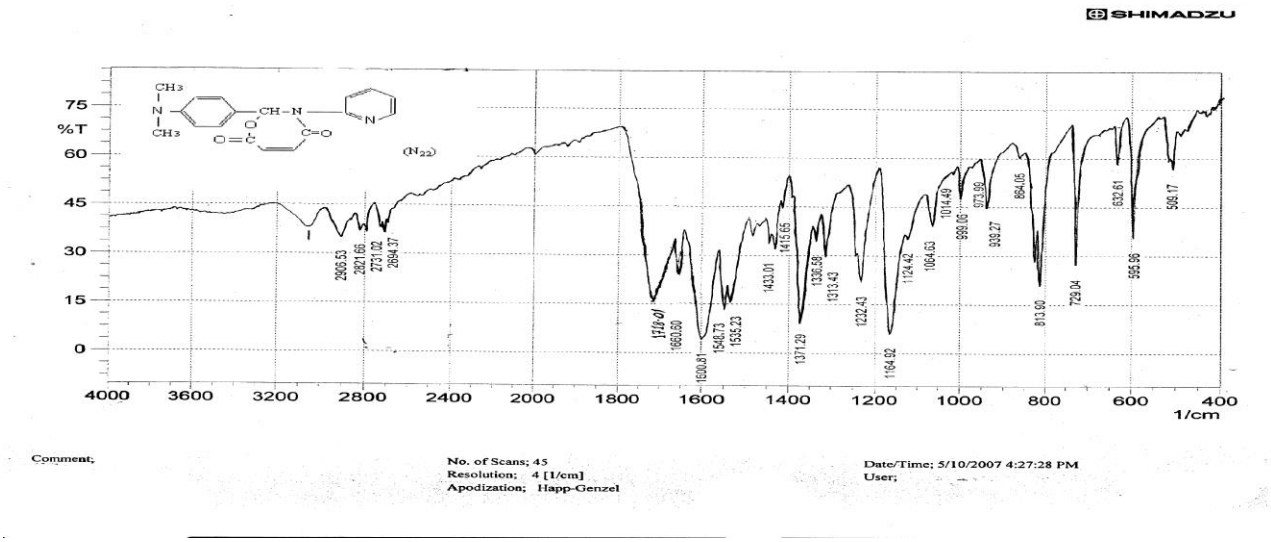


Figure (2) I.R- spectrum of compound [N_{20}]

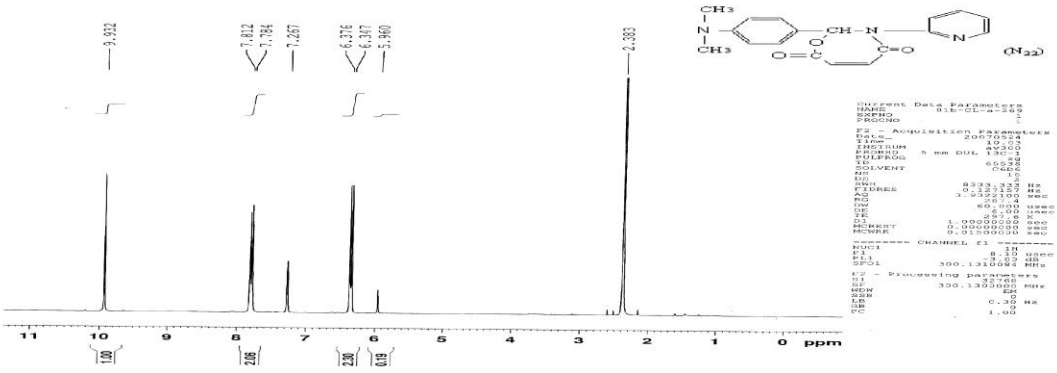


Figure (3)-H-NMR spectrum of compound [N_{22}

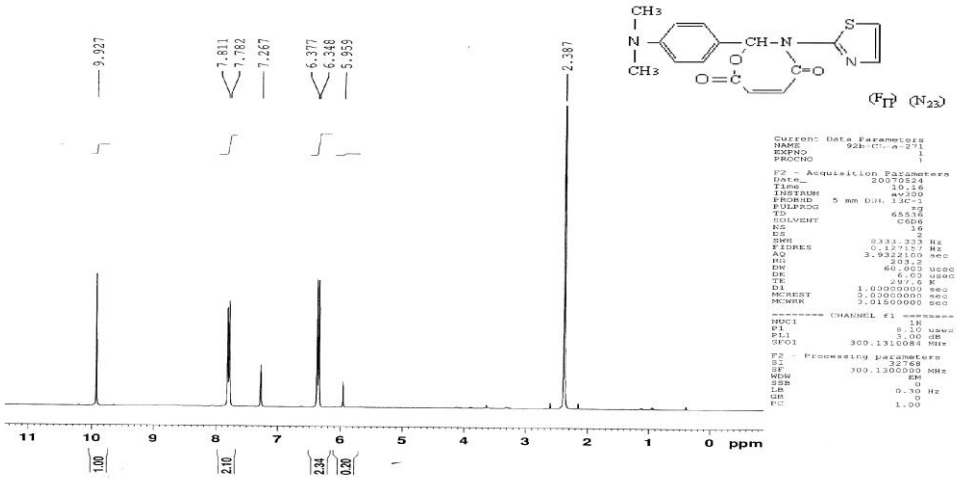


Figure (4)-H-NMR spectrum of compound

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