Egypt. J. Chem. **Vol. 63,** No. 11 pp. 4163 - 4174 (2020)

Egyptian Journal of Chemistry

http://ejchem.journals.ekb.eg/

Synthesis of Triazole Derivatives *via* Multi Components Reaction and Studying of (Organic Characterization, Chromatographic Behavior, Chem-Physical Properties)

Rajaa Abdul Ameer Ghafil[a], Nour Abd Alrazzak[b], Nagham Mahmood Aljamali*[c]

[a]*Department of Chemistry, Factuality of Education for Girls ,Kufa University ,Iraq.*

[b]*Department of Chemistry, College of Science for Women, University of Babylon, Iraq.*

[*c] *Department of Chemistry, Organic Synthetic Field, Iraq*

Abstract

In this paper, the novel component were synthesized in good yield via multi reactions like (Aldole reaction , azotation–coupling reaction, condensation reaction , substitution reaction ,cyclization reaction) by using types of conditions and multi components reactions to formation imidazole ,Thiazole ,oxazole) derivatives with bis- triazole cycles ,imidazole and thiazole The formatted triazole compounds have been characterized through spectral and chemical techniques like (^{1}H NMR, IR ,some of them C.NMR) ,studying of Chromatography studying and physical properties for all Compounds.

Keywords: multi components ; triazole; imidazole; thiazole; cyclization ;Azo; Oxazole.

1. Introduction

Heterocyclic compounds are very importance in organic chemistry due to their variety application industry and biological activity [1]. Triazol, imidazole and thiazole are simplest type of azole derivatives which is five membered heterocyclic compound [2] . Multi components reaction is an important class in synthetic chemistry like mannich reaction , condensation reaction of carbonyl compounds and other types [3-6] of organic reaction [7-13] .The first chemist has been prepared organic compounds via multicomponent reaction [14-19] was the Strecker synthesis in 1850. The interaction of multi components [20-22] (three components) occurs in a low reaction rate according to collision theory.

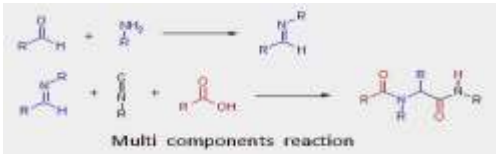


Figure 1. Multi components reactions

There many drugs and organic compounds prepared from multi component reactions which used as (antibacterial ,antifungal ,antitumor ,pharmaceutical drugs ,other applications[23-25] and uses[26-38] …)like **:**

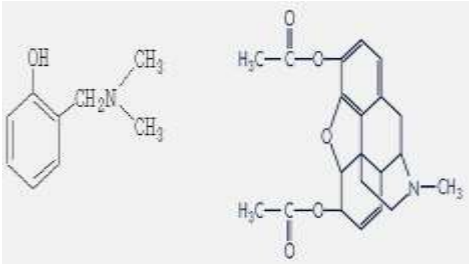


Figure 2. Antibacterial Compounds

*Corresponding author e-mail: dr.nagham_mj@yahoo.com.; (Dr.Nagham Mahmood Aljamali).

Receive Date: 05 February 2020, Revise Date: 02 March 2020, Accept Date: 11 March 2020

DOI: 10.21608/EJCHEM.2020.23541.2399

from Multicomponent reactions

In this paper we prepare different novel heterocyclic compound starting diethyl malonate which cyclization to give different heterocyclic compounds in different in multiple steps.

2. EXPERIMENTAL *SECTION:*

2.1.Materials:

The organic compounds supplied in high purity**:** Diethyl malonate, semicarbazide**,** 2-amino thiazole**,** benzaldehyde**,** formal , glycine and aniline.

2.2.Instrumentation:

The chemical identification performed on techniques like FT-IR spectra (FT-IR 8300 Shimadzu) in range (400-4000) cm^{-1} on KBr discs ., 1H.NMR– Spectra and 13C.NMR - Spectra in DMSO–solvent., Chromatographic studies .

2.3.Procedures:

2.3.1.Synthesis of Organic Compounds {1 ,2 }:

Diethyl malonate (0.01 mole, 0.92 gm) reacted and refluxed with (0.02 mole, 1.83 gm) of semicarbazide with absolute ethanol for (9 hrs) and (5 %) of (NaOH) to produce cyclic compound {1},the product (0.1 mole, 0.85 gm) reacted with (0.2 mole) of formal and 2-amino thiazole with rotation for (7 hrs) in acid medium (3 ml) (H_2SO_4) at ice temperature according to procedures [13, 14] to yield compound { 2 }.

2.3.2.Synthesis of Organic Compounds {3 , 4 }:

Compound{2}dissolved in (5 %) solution of sodium hydroxide then reacted with (benzaldehyde , diazonium salt) at room temperature and rotation for (7 hrs) according to literatures [15, 17] ,then filtered ,dried and re-crystallized from ethanol to yield compounds { 3 } and { 4 } in succession.

2.3.3.Synthesis of Organic Compounds {5-7}

Compound {1} reacted with (0.2 mole, 0.78 gm) of formal and glycine with rotation for (6 hrs) in acid medium (3 ml) (H_2SO_4) at ice path according to procedures[13,14] to yield compound {5}, which dissolved in (5 %) solution of sodium hydroxide then reacted with (benzaldehyde , diazonium salt) at room temperature and rotation for (7 hrs) according to literatures[15,17] ,then filtered ,dried and re-crystallized from ethanol to yield compounds { 6 } and {7} in succession.

2.3.4.Synthesis of Organic Compounds{8-10}:

The organic Compound {6} (0.01 mole, 1.03 gm) refluxed with (0.02mole, 0.97 gm) of 1,2-amino aniline for (6 hrs) with (4 N of HCl) , then filtered , dried and re-crystallized from ethanol to produce compound {8}.,but compound{6} (0.01 mole) refluxed with (0.02 mole, 1.11 gm) of ortho-thiol aniline for (11 hrs) with (4 N of HCl) ,then filtered , dried and re-crystallized from ethanol to give compound {9}.,and compound {6} (0.01 mole) refluxed with (0.02 mole) of ortho-amino phenol for (8 hrs) with (4 N of HCl) according to procedures [13,15] ,then filtered ,dried and re-crystallized from ethanol to produce compound {10}.,

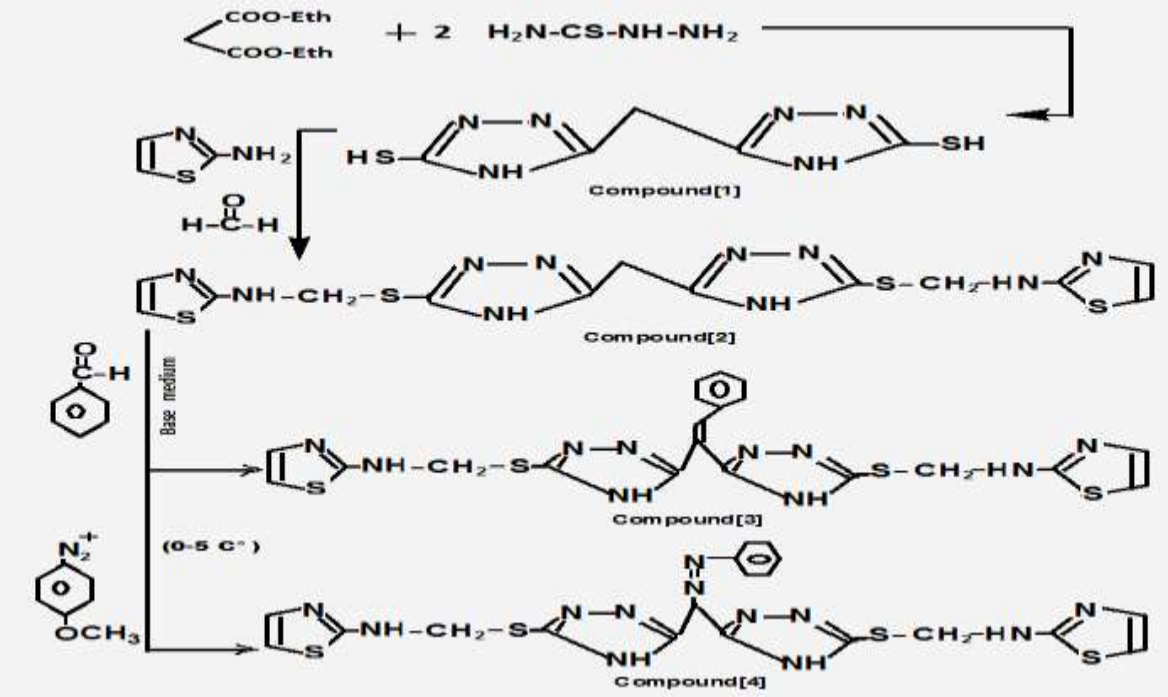
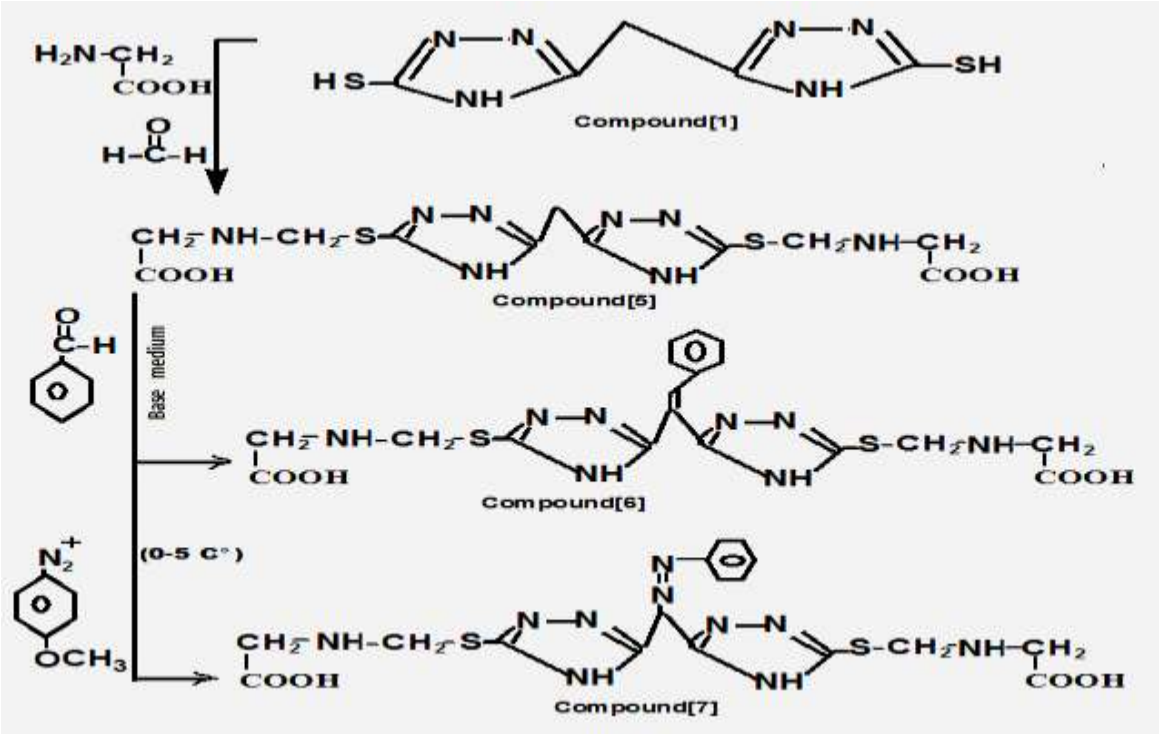
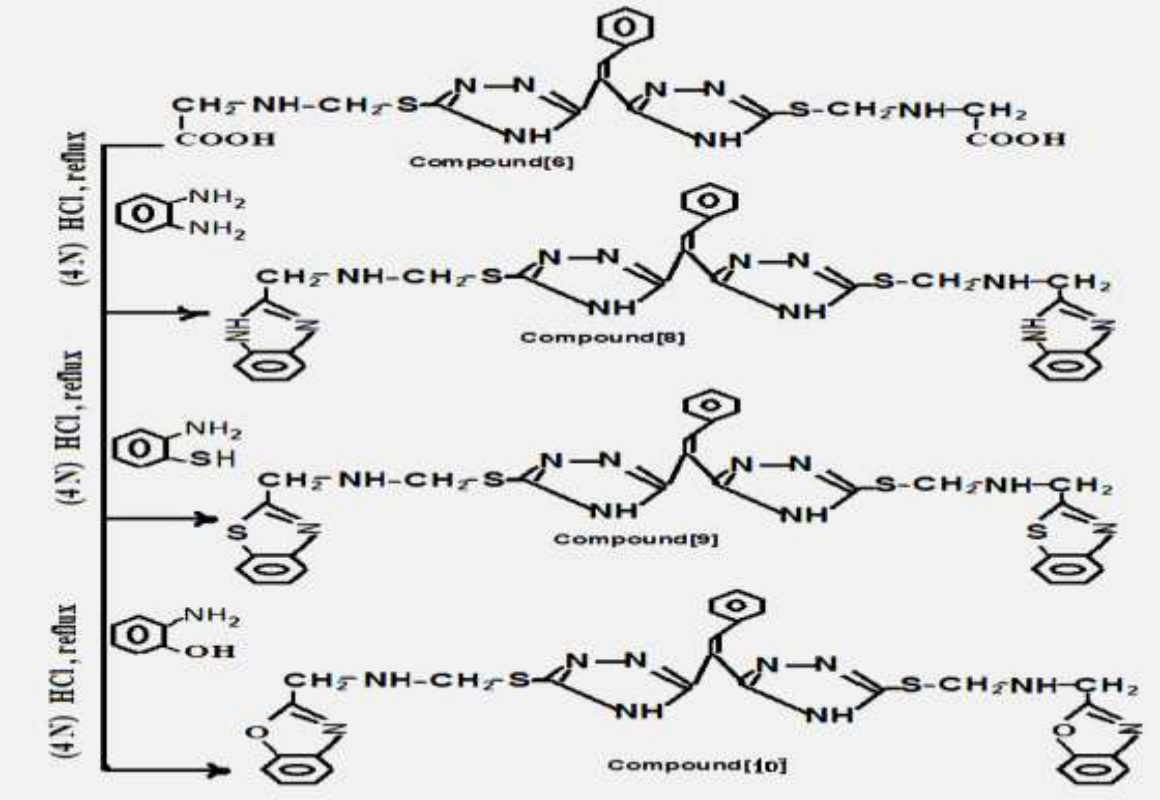


Figure 3. Synthesis of Compounds{ 1-4}



Scheme 2. Synthesis of Compounds {5-7}



Scheme 3. Synthesis of Compounds {8- 10}

3.RESULTS AND DISCUSSION:

The triazole derivatives investigated with many spectral methods like (FT.IR ,H.NMR ,C.NMR) spectra and Chromatographic studies:

3.1.Spectral Investigation:

FT.IR-Spectra of Organic Compounds: the cyclization of dimethyl malonate to triazole derivatives gave a variety absorption bands appeared at (C=N) Endocycle: 1650 .,(NH)Amine group:3300.,(CH)aliph:2900 .,(SH) Thiol group: 2450 in compound{1} ,alkylation of compound [1] gave bands appeared at (C=N) Endocycle: 1653 .,(C-S) endocycle of thiazole : 728 .,(NH)Amine group :3252 ., (CH=C): 3087 ., (S-CH_2-): 1234 .,(NH) of triazole: 3218 as a result to formation new bands in compound {2} ., addition of aldehyde in basic medium gave bands appeared at (C=N) Endocycle: 1645 .,(C-S) endocycle of thiazole : 772., (NH)Amine group :3220 .,(NH) of triazole : 3260 .,(S-CH_2-): 1250 .,(CH=C): 3090 in compound {3}., when add diazonium salt to compound [3] gave compound {4} and the bands at (C=N) Endocycle: 1657 ., (C-S) endocycle of thiazole : 786., (NH)Amine group :3271 .,(NH) of triazole : 3248 ., (S-CH_2-): 1263 ., (N=N): 1485 , 1515 .,when formaldehyde and amine add to triazole thiol gave compound {5} have bands appeared at (C=N) Endocycle: 1655 .,(CH_2-S) : 1276 ., (NH)Amine group :3231 .,(CO-O) carbonyl of carboxyl: 1708 ., (OH) of carboxl group : (2700-3070) .,(NH)Amine in triazole :3184 ., addition of aldehyde to compound [5] gave bands at (C=N) Endocycle: 1646 .,(CH_2-S) : 1238 .,(NH)Amine group :3250 .,(CO-O) carbonyl of carboxyl: 1715 .,(OH) of carboxl group : (2722-3030) .,(NH)Amine in triazole :3171 ., (CH=C): 3092 in compound {6} , the addition of diazonium salt to this compound gave azo compound and the spectrum of compound {7} appeared bands at (C=N) Endocycle: 1657 .,(CH_2-S) : 1259 .,(NH)Amine group :3294 .,(CO-O) carbonyl of carboxyl: 1706 .,(OH) of carboxl group : (2700-3096) .,(NH)Amine in triazole :3168 ., (N=N): (1448 ,1507)., but bands at (C=N) Endocycle: 1662 .,(CH_2-S) : 1251 .,(NH)Amine group :3380., (NH)Amine in triazole :3293 .,(NH) Amine of imidazole: 3210 due to compound {8} ., while appearance of bands (C=N) Endocycle: 1639 .,(CH_2-S) : 1279 ., (NH)Amine group :3356.,

(NH)Amine in triazole :3232 .,(C-S) Thiazole: 793 due to compound {9} .,the compound {10} gave bands at (C=N) Endocycle: 1650 .,(CH_2-S): 1278 ., (NH)Amine group :3300., (NH)Amine in triazole :3281 .,(C-O) Oxazole: 1185.,all bands abstracted in Table (1) .

Table 1. FT.IR- data (cm^{-1}) of Organic Compounds{1- 10 }

Comps	Other Groups
{ 1 }	(C=N) Endocycle: 1650 ., (NH)Amine group :3300., (CH)aliph:2900 ., (SH) Thiol group: 2450 .
{ 2 }	(C=N) Endocycle: 1653 ., (C-S) endocycle of thiazole : 728 ., (NH)Amine group :3252 ., (CH=C): 3087 ., (S-CH_2-): 1234 .,(NH) of triazole: 3218
{ 3 }	(C=N) Endocycle: 1645 ., (C-S) endocycle of thiazole : 772., (NH)Amine group :3220 ., (NH) of triazole : 3260 ., (S-CH_2-): 1250 ., (CH=C): 3090 .
{ 4 }	(C=N) Endocycle: 1657 ., (C-S) endocycle of thiazole : 786., (NH)Amine group :3271 .,(NH) of triazole: 3248 ., (S-CH_2-): 1263 .,(N=N): 1485 , 1515 .
{ 5 }	(C=N) Endocycle: 1655 .,(CH_2-S) : 1276 ., (NH)Amine group :3231 .,(CO-O) carbonyl of carboxyl: 1708 ., (OH) of carboxl group : (2700-3070) ., (NH)Amine in triazole :3184 .
{ 6 }	(C=N) Endocycle: 1646 .,(CH_2-S) : 1238 ., (NH)Amine group :3250 .,(CO-O) carbonyl of carboxyl: 1715 ., (OH) of carboxl group : (2722-3030) ., (NH)Amine in triazole :3171 ., (CH=C): 3092 .
{ 7 }	(C=N) Endocycle: 1657 .,(CH_2-S) : 1259 ., (NH)Amine group :3294 .,(CO-O) carbonyl of carboxyl: 1706 ., (OH) of carboxl group : (2700-3096) ., (NH)Amine in triazole :3168 ., (N=N): (1448 ,1507) .
{ 8 }	(C=N) Endocycle: 1662 .,(CH_2-S) : 1251 ., (NH)Amine group :3380., (NH)Amine in triazole :3293 .,(NH) Amine of imidazole: 3210 .
{ 9 }	(C=N) Endocycle: 1639 .,(CH_2-S) : 1279 ., (NH)Amine group :3356., (NH)Amine in triazole :3232 .,(C-S) Thiazole: 793 .
{ 10 }	(C=N) Endocycle: 1650 .,(CH_2-S) : 1278 ., (NH)Amine group :3300., (NH)Amine in triazole :3281 .,(C-O) Oxazole: 1185 .

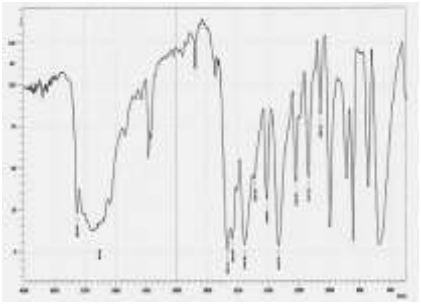


Figure 3. FT.IR of Compound{1}

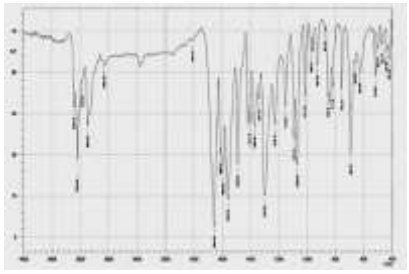


Figure 4. FT.IR -Compound{3}

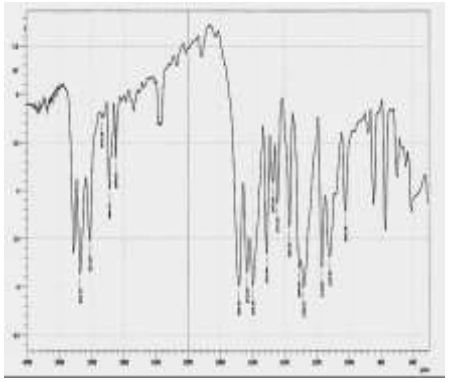


Figure 5. FT.IR of Compound {8}

^{1}H.NMR- Spectra of Compounds : It gave many signals at δ DMSO-d6(solvent): 2.50 .,(-CH_2) Protons : 0.60 .,(NH-)Triazole: 5.80., (-SH)proton of thiol group : 12.36 in compound {1} .,while it showed signals at (-CH_2-) Protons : 0.50 .,(NH-) Triazole : 5.10 ., (NH-) proton of amine : 5.30 ., (S-CH_2-N): 3.33 ., Protons of heterocyles: (7.33-7.85)

in compound {2} .,(NH-) Triazole : 5.19 ., (NH-) proton of amine : 5.56 ., (S-CH_2-N): 3.12 ., Protons of aromatic ring: (7.00-7.71) ., (C=CH) :2.80 in compound { 3} ., (NH-) Triazole : 5.26 ., (NH-) proton of amine : 5.42 ., (S-CH_2-N): 3.17 ., Protons of aromatic ring: (7.08-7.86) in compound {4} (NH-): 5.62 ., Protons of Phenyl ring and heterocycles : (6.75-7.83) ., (C=CH) :2.19 in compound {5} .,(NH-) Triazole : 5.37 ., (NH-) proton of amine : 5.59 ., (S-CH_2-N): 3.31 ., Protons of aromatic ring: (7.41-7.85) ., (C=CH) :4.36 ., (COOH) proton of carboxyl group : 13.10 in compound { 6} .,(NH-) Triazole : 5.44 ., (NH-) proton of amine : 5.97 ., (S-CH_2-N): 3.16 ., Protons of aromatic ring: (7.11-7.92) .,(COOH) proton of carboxyl group : 13.05 in compound { 7}.,(NH-) Triazole : 5.25 ., (NH-) proton of amine : 5.61 ., (S-CH_2-N): 3.20 ., Protons of aromatic ring: (7.13-7.87) ., (C=CH) :4.76 in compound { 8} .,(NH-) Triazole : 5.48 ., (NH-) proton of amine : 5.63 ., (S-CH_2-N): 3.24 ., Protons of aromatic ring: (7.21-7.75) ., (C=CH) :4.15 in compound {9} ., (NH-) Triazole : 5.10 ., (NH-) proton of amine : 5.52 ., (S-CH_2-N): 3.17 ., Protons of aromatic ring: (7.00-7.74) ., (C=CH) :4.19 in compound { 10} , with other data and signals appeared in table (2) .

Table 2. H.NMR-data (δ - ppm) of Compounds {1–10}

Comps	Other groups
{ 1 }	DMSO-d6(solvent): 2.50 ., (-CH_2 -) Protons : 0.60 ., (NH-)Triazole: 5.80., (-SH)proton of thiol group : 12.36 .
{ 2 }	DMSO-d6(solvent): 2.50 .,(-CH_2 -) Protons : 0.50 .,(NH) Triazole : 5.10 .,(NH) proton of amine: 5.30 .,(S-CH_2-N): 3.33 .,Protons of heterocyles: (7.33-7.85).
{ 3 }	DMSO-d6(solvent): 2.50 .,(NH) Triazole : 5.19 ., (NH) proton of amine : 5.56 ., (S-CH_2-N): 3.12 ., Protons of aromatic ring: (7.00-7.71) ., (C=CH) :2.80 .
{ 4 }	DMSO-d6(solvent): 2.50 .,(NH) Triazole : 5.26 ., (NH) proton of amine : 5.42 ., (S-CH_2-N): 3.17 ., Protons of aromatic ring: (7.08-7.86) .
{ 5 }	DMSO-d6(solvent): 2.50 ., (NH): 5.62 ., Protons of Phenyl ring and heterocycles : (6.75-7.83) ., (C=CH) :2.19 .
{ 6 }	DMSO-d6(solvent): 2.50 .,(NH) Triazole : 5.37 ., (NH) proton of amine : 5.59 ., (S-CH_2-N): 3.31 ., Protons of aromatic ring: (7.41-7.85) ., (C=CH) :4.36 ., (COOH) proton of carboxyl group : 13.10
{ 7 }	DMSO-d6(solvent): 2.50 .,(NH) Triazole : 5.44 ., (NH) proton of amine : 5.97 ., (S-CH_2-N): 3.16 ., Protons of aromatic ring: (7.11-7.92) .,(COOH) proton of carboxyl group : 13.05
{ 8 }	DMSO-d6(solvent): 2.50 .,(NH) Triazole : 5.25 ., (NH) proton of amine : 5.61 ., (S-CH_2-N): 3.20 ., Protons of aromatic ring: (7.13-7.87) ., (C=CH) :4.76 .
{ 9 }	DMSO-d6(solvent): 2.50 .,(NH) Triazole : 5.48 ., (NH) proton of amine : 5.63 ., (S-CH_2-N): 3.24 ., Protons of aromatic ring: (7.21-7.75) ., (C=CH) :4.15 .
{ 10 }	DMSO-d6(solvent): 2.50 .,(NH) Triazole : 5.10 ., (NH) proton of amine : 5.52 ., (S-CH_2-N): 3.17 ., Protons of aromatic ring: (7.00-7.74) ., (C=CH) :4.19 .

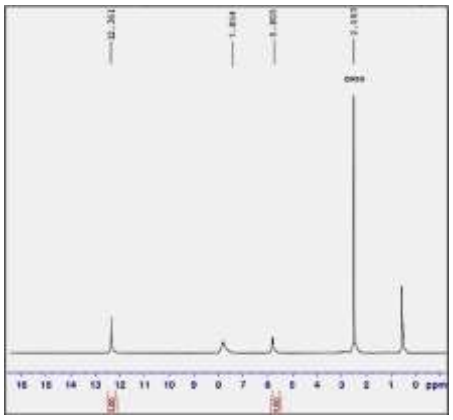


Figure 6.[1]H. NMR- Compound{1}

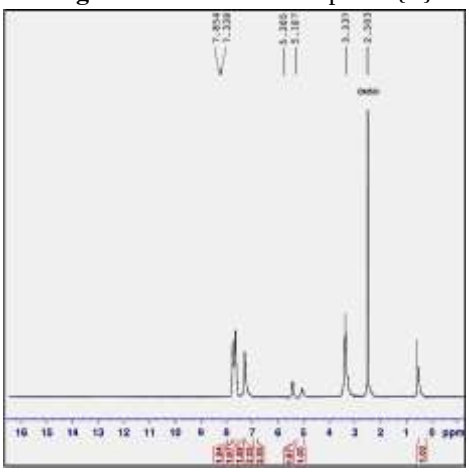


Figure.7: [1]H.NMR- Compound{2}

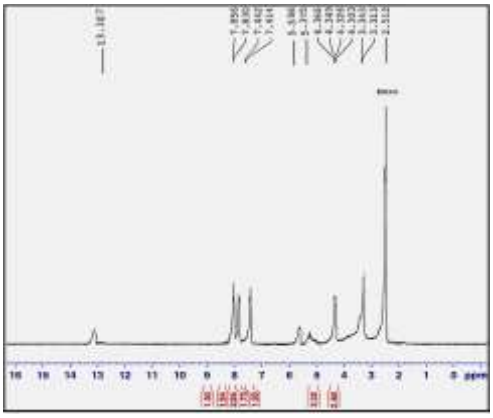


Figure 8. [1]H.NMR - Compound{6}

The ^{13}C.NMR spectral :All spectra appeared new signals indicate to formation of new organic compounds and new functional groups[8] in these compounds, table (3):

Compound{1}:(40.0) for solvent (DMSO) ., (20.0) for (C , methylene group -$\underline{CH_2}$-)., (135.0 -140.0) for (C , Triazole cycles).

Compound {2}: (40.0) for solvent (DMSO) ., (15.0) for (C , methylene group -$\underline{CH_2}$-)., (140.0 -145.0) for (C , Triazole cycles) ., (150.0 -155.0) for (C , Thiazole cycles) ., (62.0) for (C, S-$\underline{CH_2}$-N).

Compound{3}: (40.0) for solvent (DMSO) ., (135.0 -145.0) for (C , Triazole cycles) ., (150.0 -160.0) for (C , Thiazole cycles) ., (68.0) for (C, S-$\underline{CH_2}$-N) ., (108.0 , 110.0) for (C , C=CH) .,(118.0 - 130.0) for (C , phenyl ring).

Compound{4}: (40.0) for solvent (DMSO) ., (140.0 -145.0) for (C , Triazole cycles) ., (150.0 -155.0) for (C , Thiazole cycles) ., (70.0) for (C, S-$\underline{CH_2}$-N) ., (55.0) for (C , CH -N=N) .,(120.0 - 130.0) for (C , phenyl ring.

Compound{5}: (40.0) for solvent (DMSO) ., (138.0 -145.0) for (C , Triazole cycles) .,(70.0) for (C, S-$\underline{CH_2}$-N) ., (60.0) for (C , N-$\underline{CH_2}$-C) .,(15.0) for (C , methylene group -$\underline{CH_2}$-)., (184.0) for (C , COOH) .

Compound{6} : (40.0) for solvent (DMSO) ., (145.0 -150.0) for (C , Triazole cycles) ., (75.0) for (C, S-$\underline{CH_2}$-N) ., (60.0) for (C , N-$\underline{CH_2}$-C) ., (185.0) for (C , COOH) ., (110.0 , 114.0) for (C , C=CH) .,(125.0 - 130.0) for (C , phenyl ring).

Compound{7}: (40.0) for solvent (DMSO) ., (140.0 -144.0) for (C , Triazole cycles) ., (78.0) for (C, S-$\underline{CH_2}$-N) ., (65.0) for (C , N-$\underline{CH_2}$-C) ., (180.0) for (C , COOH) .,(120.0 - 135.0) for (C , phenyl ring)., (58.0) for (C , CH -N=N) .

Compound {8}: (40.0) for solvent (DMSO) ., (135.0 -140.0) for (C , Triazole cycles) ., (75.0) for (C, S-$\underline{CH_2}$-N) ., (60.0) for (C , N-$\underline{CH_2}$-C) .,(115.0 - 125.0) for (C , phenyl ring).,(105.0 , 108.0) for (C , C=CH) ., (140.0 -150.0) for (C , Imidazole cycles).

Compound {9}: (40.0) for solvent (DMSO) .,(140.0 -145.0) for (C , Triazole cycles) .,(70.0) for (C, S-$\underline{CH_2}$-N) ., (64.0) for (C , N-$\underline{CH_2}$-C) .,(120.0 - 130.0) for (C , phenyl ring)., (108.0 , 112.0) for (C , C=CH) ., (150.0 -152.0) for (C , Thiazole cycles).

Compound{10}: (40.0) for solvent (DMSO) ., (135.0 -140.0) for (C , Triazole cycles) ., (75.0) for (C, S-$\underline{CH_2}$-N) ., (60.0) for (C , N-$\underline{CH_2}$-C) .,(115.0 - 125.0) for (C , phenyl ring)., (105.0 , 108.0) for (C , C=CH) ., (145.0 -150.0) for (C , Oxazole cycles).

Table 3 . ^{13}C.NMR- data of Compounds

Comps.	^{13}C.NMR-data ((Only Important Peaks))
{ 1}	(40.0) for solvent (DMSO) ., (20.0) for (C , methylene group -$\underline{CH_2}$-)., (135.0 -140.0) for (C , Triazole cycles).
{ 2}	(40.0) for solvent (DMSO) ., (15.0) for (C , methylene group -$\underline{CH_2}$-)., (140.0 -145.0) for (C , Triazole cycles) ., (150.0 -155.0) for (C , Thiazole cycles) ., (62.0) for (C, S-$\underline{CH_2}$-N)
{ 3}	(40.0) for solvent (DMSO) ., (135.0 -145.0) for (C , Triazole cycles) ., (150.0 -160.0) for (C , Thiazole cycles) ., (68.0) for (C, S-$\underline{CH_2}$-N) ., (108.0 , 110.0) for (C , $\underline{C=CH}$) .,(118.0 - 130.0) for (C , phenyl ring).
{ 4}	(40.0) for solvent (DMSO) ., (140.0 -145.0) for (C , Triazole cycles) ., (150.0 -155.0) for (C , Thiazole cycles) ., (70.0) for (C, S-$\underline{CH_2}$-N) ., (55.0) for (C , $\underline{CH}$ -N=N) .,(120.0 - 130.0) for (C , phenyl ring).
{ 5 }	(40.0) for solvent (DMSO) ., (138.0 -145.0) for (C , Triazole cycles) .,(70.0) for (C, S-$\underline{CH_2}$-N) ., (60.0) for (C , N-$\underline{CH_2}$ -C) .,(15.0) for (C , methylene group -$\underline{CH_2}$-)., (184.0) for (C , $\underline{C}$OOH) .
{6 }	(40.0) for solvent (DMSO) ., (145.0 -150.0) for (C , Triazole cycles) ., (75.0) for (C, S-$\underline{CH_2}$-N) ., (60.0) for (C , N-$\underline{CH_2}$ -C) ., (185.0) for (C , $\underline{C}$OOH) ., (110.0 , 114.0) for (C , $\underline{C=CH}$) .,(125.0 - 130.0) for (C , phenyl ring).
{7}	(40.0) for solvent (DMSO) ., (140.0 -144.0) for (C , Triazole cycles) ., (78.0) for (C, S-$\underline{CH_2}$-N) ., (65.0) for (C , N-$\underline{CH_2}$ -C) ., (180.0) for (C , $\underline{C}$OOH) .,(120.0 - 135.0) for (C , phenyl ring)., (58.0) for (C , $\underline{CH}$ -N=N) .
{ 8 }	(40.0) for solvent (DMSO) ., (135.0 -140.0) for (C , Triazole cycles) ., (75.0) for (C, S-$\underline{CH_2}$-N) ., (60.0) for (C , N-$\underline{CH_2}$ -C) .,(115.0 - 125.0) for (C , phenyl ring).,(105.0 , 108.0) for (C , $\underline{C=CH}$) ., (140.0 -150.0) for (C , Imidazole cycles).
{ 9 }	(40.0) for solvent (DMSO) .,(140.0 -145.0) for (C , Triazole cycles) .,(70.0) for (C, S-$\underline{CH_2}$-N) ., (64.0) for (C , N-$\underline{CH_2}$ -C) .,(120.0 - 130.0) for (C , phenyl ring)., (108.0 , 112.0) for (C , $\underline{C=CH}$) ., (150.0 - 152.0) for (C , Thiazole cycles).
{ 10 }	(40.0) for solvent (DMSO) ., (135.0 -140.0) for (C , Triazole cycles) ., (75.0) for (C, S-$\underline{CH_2}$-N) ., (60.0) for (C , N-$\underline{CH_2}$ -C) .,(115.0 - 125.0) for (C , phenyl ring)., (105.0 , 108.0) for (C , $\underline{C=CH}$) ., (145.0 -150.0) for (C , Oxazole cycles).

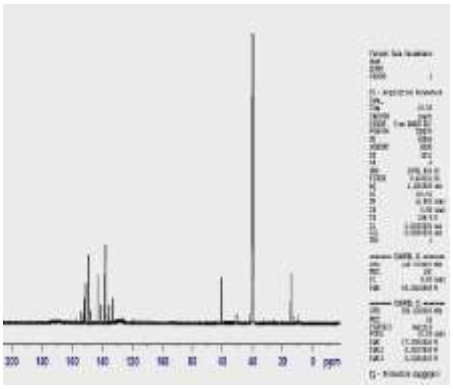


Figure 9. ^{13}C.NMR of Compound{2}

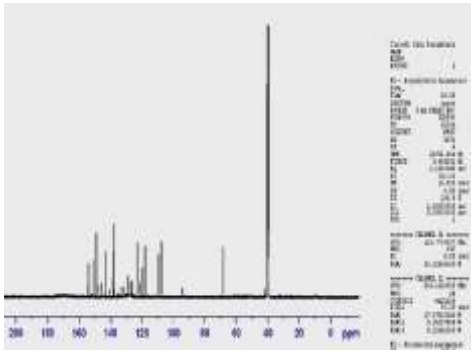


Figure 10. ^{13}C.NMR of Compound{3}

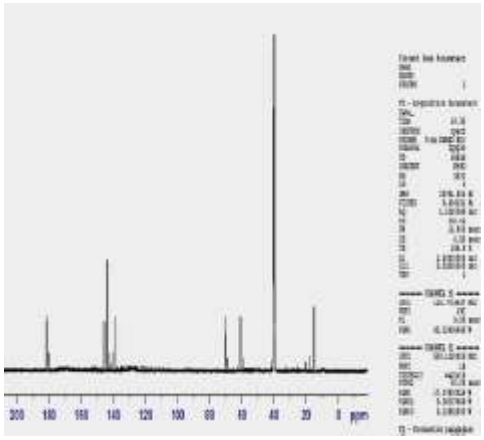


Figure 11. ^{13}C.NMR of Compound{5}

4.Chromatographic Behavior of Formatted Compounds :

Diluted concentration of formatted compounds { 1 , 5 , 6 , 7 } were prepared then injected through a syringe (Hamilton) in capacity (10ml)via gas carrier [Nitrogen (gas flow 25 ml/min)]. The formatted organic compounds separated according to their (polarity [8, 10] , nature ,molecular weight .,for this reason the compound{1} separated at the first time due to [25-32] it has less molecular weight compared with other compounds , then compound {5} , then compound {6} and the last one compound {7}, figures (12- 15).

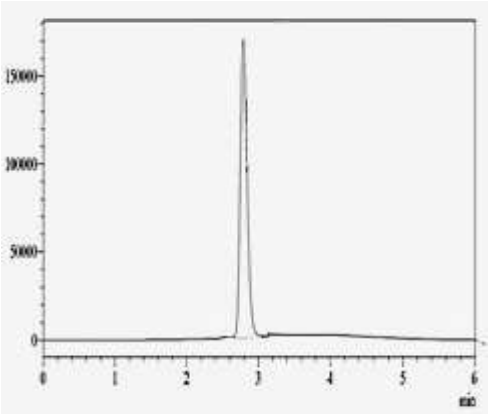


Figure 12. Chromotogram of Organic Compound{1}

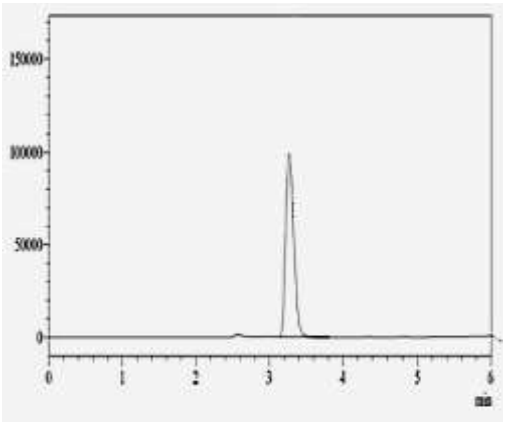


Figure.13. Chromotogram of Organic Compound{5}

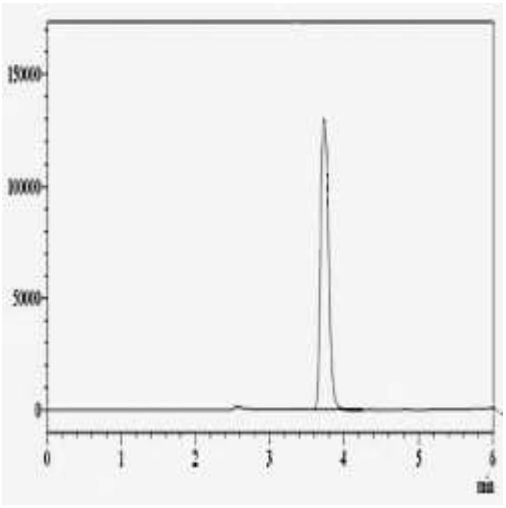


Figure.14. Chromotogram of Organic Compound{6}

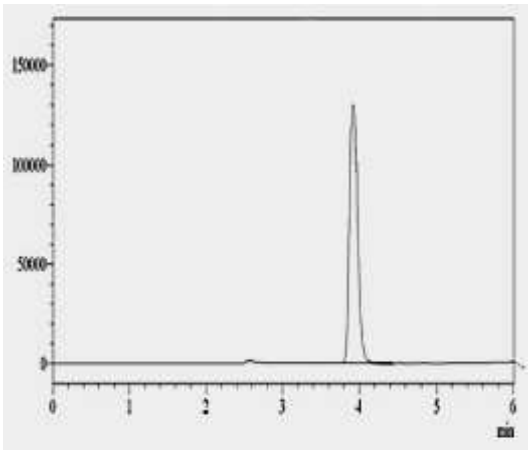


Figure.15. Chromotogram of Organic Compound{7}

5.Physical and Chemical Properties of Formatted Compound{1–10}:

The formatted organic compounds appeared some physical properties which summarized in table (4):

Table 4. Some Physical with Chemical Properties for Organic compounds {1–10}

Compounds	Yield %	R_f	Solvents of (TLC) (1:2)
{1 }	70	0.64	Ethanol : Dioxan
{ 2}	72	0.66	Ethanol : Dioxan
{ 3 }	70	0.60	Ethanol : Dioxan
{ 4 }	72	0.62	Ethanol : Dioxan
{ 5 }	72	0.70	Ethanol : Dioxan
{ 6 }	68	0.64	Ethanol : Dioxan
{7 }	74	0.62	Ethanol : Dioxan
{8 }	70	0.60	Ethanol : Dioxan
{ 9 }	68	062	Ethanol : Dioxan
{10 }	70	0.60	Ethanol : Dioxan

6.Conclusions : The formatted organic compounds separated according to their (polarity [8, 10] , nature ,molecular weight .,for this reason the compound{1} separated at the first time due to [25-32] it has less molecular weight compared with other compounds , then compound {5} , then compound {6}

7.Conflicts of interest : There is no any Conflict of Interest

8.Formatting of funding sources : Self funding.

9.Acknowledgment : we would like to express our heartfelt thanks to Mr. Ali Kahtan for providing assistance of measurements and analysis.

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