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SYNTHESIS, CHARACTERIZATION OF NEW HETEROCYCLIC RING BASED ON 2, 5-DIMERCAPTO1, 3, 4 -THIADIAZOLE

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ABSTRACT

In this work preparation a number of heterocyclic compounds beginners of 2, 5 dimercapto -1, 3, 4- thiadiazole [1] created from interaction hydrazine hydrate with carbon disulphide in absolute ethanol. After then compound [1] reaction with (2mol) thiosemicarbazide to give triazolo derivation [2] and treatment (2mol) from chloroacetyle chloride with compound [3] in dry pyridine obtain on -3,6 dichloroacetamido 1,3,4 thiadiazole derivation. Then the compound [3] reaction with urea and thiourea to give 3, 6 disubstitution from oxazole and thiazole 1, 3, 4- thiodiazole derivation [4, 5]. The treatment of the compounds [4, 5] with derivation aromatic aldehyde to give Schiff base [6-9]. Schiff base treatment with (chloroacetyle chloride, sodium azide, mercaptoacetic acid) in order to give new derivation Schiff base compound β-Lactam [10-13], Tetrazole [14-17], Thiazolidinones [18-21]. The compound characterization was done by using [FT-IR, UV, H-NMR spectra and elemental analysis (C.H.N.S)].

KEYWORDS: 1, 3, 4- Thiadiazole Fused With 1, 2, 4-Triazole Ring, Schiff Base

INTRODUCTION

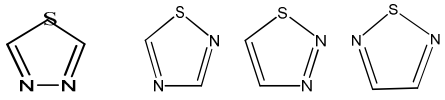
The received heterocyclic compounds attention of researchers over the times. Hetero-cyclic compound have wide application in phar-maceutical and chemical fields. There are many researches about heterocyclic compound such as (thiazole, triazole, oxazole, thiazole, tetrazole) and so on [(1)]. Thiadiazole is one of heterocyclic compound consists of five members contain two nitrogen atoms and one sulpher atom as hetro atoms. There are several isomers of thiadiazole Figure. (1)[(2)]:

1- 1, 3, 4 thiadiazole

2- 1, 2, 4 thiadiazole

3- 1, 2, 3 thiadiazole

4- 1, 2, 5 thiadiazole



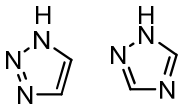
[1] [2] [3] [4]

Figure 1: Structure of Thiadiazole Isomers

1, 3, 4- thiadiazole posses biological activity as antibacterial [(3)] anti-inflammatory [(2)] anti-microbial [(4)]. In this search triazole fused with 1, 3, 4 thiadiazole until to give new compound of thiadiazole deriva-tives [(5)]. Triazole has five member rings of two carbon atoms and three nitrogen atoms, it has two isomer form (Figure.2) [(6)]:

1- 1, 2, 4 triazole

2- 1, 3, 4 triazole



(1) (2)

Figure 2: Structure of Thiadiazole Isomers

The studies have proven fusion 1, 3, 4 thiadiazole with 1, 2, 4 triazole posses biological activity as antifungal [(7)], analgesic [(5)], anticancer [(8)]. In this research the fusing heterocyclic compound reaction with testing give Schiff bases compound have very important biological activities [(9)]**.** The importance of Schiff base belong to (N=CH) group, Schiff base compounds have numerous applications in medicinal and pharmaceutical fields [(10)]. They show biological activities include-ing antibacterial, antifungal[(11)], anticancer [(9)] and antioxidant[(12).] Schiff base react with chloacetyle chloride, sodium azide, mercaptoacetic acid until to bear new derivatives of heterocyclic com-pound and it reacts with chloroacetyle chloride to gave β-Lactam compound [(13).]β-Lactams is contain four members cyclic amides 2-azetidinones [(14)], it represent antibiotics including : Penicillins and Cephalosporin classes [(15)], then the treatment of Schiff base with sodium azid in order to give tetrazoles. Tetrazole is heterocyclic compound consist of five member rings containing four chemistry [(17)]. At the end Schiff base react with mercapto acetic acid to produce thiazolidinones. The tetrazole plays an important role in medicinal. They are one of the thiazolidin derivative contain five members consist one sulpher, nitrogen atoms and carbonyl group at four positions [(17)] which having widely biological activity exhibit antibacterial[(18)], antifungal[(19),] anticonvulsant [(19)].

MATERIALS AND METHODS

Chemicals were used of analytical degree, melting points determined in Gallen kamp apparatus and they uncorrected. Ultra violet spectra was recorded employing Shimadzu (UV-Visible) in range (200-900)nm ;FT-IR spectra was recorded on Shimadzu FT-IR-8400 Fourier Transform Infrared Spectra as KBr disc**.** The elements analysis of compound (C. H. N. S) by using a Perkin -Elmer, RE (2400) measurement in College of Education for Pure Science (Ibn Al-Hatham), Baghdad University. H. N. M. R spectra compound measurements at College of Education for Pure Science (Ibn Al-Haitham), Baghdad University operating at 60MHz in DMSO-d_6, as solvent purity of the compounds checked by thin layer chromatography (TLC) on silica gel G-coated plates using ethanol.

Prepration of Compound (2,5 Dimercapto-1,3,4 -Thiadiazole)[1] [(20)]:

A mixture of hydrazine (4.8 ml,0.1mol) and carbon disulfide (12ml,0.2mol) were dissolved in 40 ml of absolute ethanol. The mixture reflexes for (4) hrs. The product collected after refrige-ration and re-crystallized from distilled water. The physical characteristic of the synthesized compo-und was given in Table (1).

Prepration of Bis ([1,2,4]Triazolo)[3,4-B, ˉ4:ˉ3-D] [1,3,4] Thiadiazole-3,6 Diamine[2][(21)]:

It produced from the reaction of compound [2](0.01mol,1.5g) and thiosemicarbazide (0.02 mol, b1.82g) were taken in round bottom flask. The mixture dissolved in (40ml) of absolute ethanol and reflexes for (50) hrs. The output collected after cooling and re-crystallized from distilled water. The physical properties of the synthesized compound were

given in Table (1).

Synthesis of Bis ([1,2,4]Triazolo)[3,4-B, ¯4:¯3-D] [1,3,4] Thiadiazole-3,6 Dichloroacetamido [3][(22)].

Freshly distilled chloroacetyl chloride (0.5 ml, 0.02 mol) was progressively added to the mixture of (0.01mol, 2gm) compound [2] in 10 ml pyridine and had put in a snowy bath with stirring for (4) hrs. After the complete reaction done in ice cold water added to the reaction blended and rigid so thus separated filtered and dried to bring compound [3] and re-crystallized from methanol. The physical property of the synthesis compound was given in Table (1).

Synthesis of N, N'-Bis(2-Amino-1,3-Oxazol-4-Yl) Bis[1,2,4]Triazolo[3,4-B:4',3'-D] [1,3,4]Thiadiazole-3,6-Diamine[4][(23)]:

Compound [3] (0.001mol,0.5gm) blend of the urea (0.02mol,0.1gm) at (90-100)C^0 for (1) hr, then to allowed cold and washed with water. The robust distilled and re-crystallized from ethanol to grant yellow sheet. The physical properties of synthesized compound were given in Table (1).

Synthesis of N,N'-Bis(2-Amino-1,3-Thiazol-4-Yl)Bis[1,2,4]Triazolo[3,4-B:4',3'-D][1,3,4]
Thiadiazole -3, 6-Diamine [5] [(23)]:

Compound [3] mixing of (0.5gm0.001mol) and thiourea (0.15gm, 0.002mol) dissolved at (90-100) C^0 for (1) hr, then to allowed cold and washed with water. The rigid distilled and re-crystallized from ethanol to bring yellow sheet. The physical properties of synthesized compound were given in Table (1).

Synthesis of (Schiff Base) Compound [6-9] [(24)]:

Treatments each one of compound [4]and compound [5] (0.001mol) with (0.002mol) from two aldehyde derivations are respectively benzald-ehyde and p-hydroxyl benzaldehyde, p-methoxy benzaldehyde, p- nitro benzaldehyde) in (40 ml) from ethanol and added to drops of glacial acetic acid and reflex mixture for (8)hrs then leaved cold, filtered and re-crystallized from ethanol and water for 1:1. The physical properties to those compounds give in Table (1).

Synthesis of β -Lactam Derivatives [10-13] [(13)]:

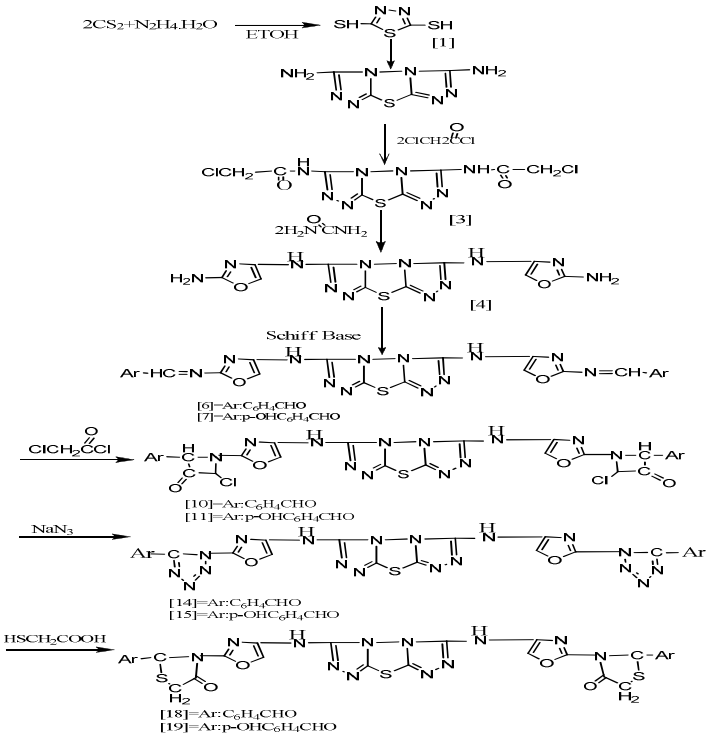
Compounds of Schiff base [6-9] (3mmol) were dissolved in (15 ml) dimethyl formamide and treatment with (6mmol) chloroacetyl chloride after that added (2) drops of pyridine, then reflexes mix for (5)hrs, then added (6 mmol) from triethylamine. The blend refluxed for (1) hr after the completion of reaction iced cold water was added to the reaction blend and rigid the separated filtered, dried to bring compound [β-Lactam], re-crystallized by suitable solvent. Physical properties give in Table (1).

Synthesis of Tetrazole Derivatives [14-17] [(25)]:

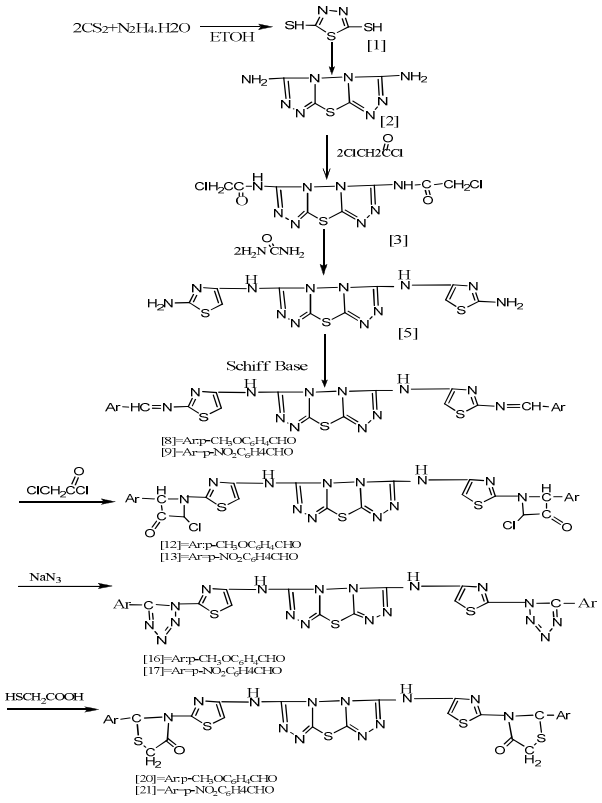
Compounds [6,9] (0.005mol) were dissolve-ed in (15ml) tetrahydrofuran and dealing with (NaN_3) (0.01mol). Compounds of these ones were mixture heated in water bath at (66C^0) for (8) hrs. They filtered and re-crystallized from ethanol and water for1:1. Physical properties give in Table (3).

Synthesis of Thiazolidinones Derivatives [18-21][(26)]:

Solution mercaptoacetic acid (7mmol) in dry benzene (10ml) added gradually to (3mmol) of compounds [6-9] in dry benzene (10ml). The addition took about (10) seconds with stirring there after the blend refluxed for (12) hrs. The mixture vaporized and remains processed by solution of sodium bicarbonate to get rid from over mercaptoacetic acid. The compound gained re-crystallized by suitable solvent. Physical prope-rties give in Table (3)



Scheme (1)

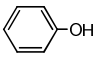
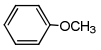
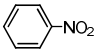
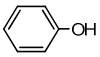
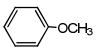
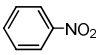
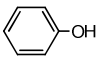
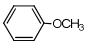
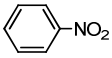
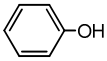
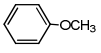
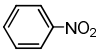


Scheme (2)

Table 1: Physical Properties of Synthesized Compounds [1-5]

Comp. No	Molecular Formula	Colour	Yield %	M.P	Recryst. solvent
1	$C_2H_2N_2S$	White	73	160-163	Distill warer
2	$C_4H_4N_8S$	White	73	122-123	Distill water
3	$C_8H_6N_8SCl_2O_2$	Yellow	45	80-83	Methanol
4	$C_{10}H_8N_{12}SO_2$	Powder Red	51	100-105	Ethanol:H_2O 1:1
5	$C_{10}H_8N_{12}S_3$	Powder Red	52	110 -113	Ethanol:H_2O 1:1

Table 2: Physical Properties of Synthesized Compounds [6-9]

Comp. No	Ar.	Molecular Formula	Color	Yield %	M.P	Recryst. Solvent
6		$C_{24}H_{14}N_{12}O_2S$	Yellow	64	130-133	Ethanol:H_2O 1:1
7		$C_{24}H_{16}N_{12}O_4S$	Orange	64	170-175	Ethanol:H_2O 1:1
8		$C_{26}H_{20}N_{12}O_2S_3$	Yellow	56	125-130	Ethanol:H_2O 1:1
9		$C_{24}H_{14}N_{14}S_3O_4$	Brown	56	130-135	Ethanol:H_2O 1:1
10		$C_{28}H_{16}N_{12}O_4SCl_2$	Yellow	65	200-205	Methanol:H_2O 1;1
11		$C_{28}H_{18}N_{12}O_6SCl_2$	Orange	6o	218-220	Ethanol:H_2O 1:1
12		$C_{30}H_{22}N_{12}OS_3Cl_2$	Black	62	Oily	Aceton:H_2O 1:1
13		$C_{28}H_{16}N_{14}O_6S_3Cl_2$	Light Yellow	62	258-260	Etanol:H_2O 1:1
14		$C_{24}H_{12}N_{18}O_2S$	Dark Brown	69	Dec.	Etanol:H_2O 1:1
15		$C_{24}H_{14}N_{18}O_4S$	Orange	69	210-220	Chloroform: H_2O 1:1
16		$C_{26}H_{18}N_{18}O_2S_3$	Brown	68	250-253	Etanol:H_2O 1:1
17		$C_{26}H_{18}N_{20}O_4\ S_3$	Light Yellow	71	Dec.	Etanol:H_2O 1:1
18		$C_{28}H_{16}N_{12}O_4S_3$	Yellow	66	220-222	Etanol:H_2O 1:1
19		$C_{28}H_{18}N_{12}O_6S_3$	Orange	60	259-263	Chloro form:H_2O
20		$C_{30}H_{22}N_{12}O_4S_5$	Brown	62	260-265	Etanol:H_2O 1:1
21		$C_{28}H_{18}N_{14}O_6S_5$	Yellow	70	270-275	Etanol:H_2O 1:1

RESULTS AND DISCUSSIONS

First step include preparation of 2,5 dimercapto 1,3,4- thiadiazole from hydrazine and Carbon disulfide in absolute ethanol, characterri-zed by its melting point which was identical with the degree of fusion in the literature (160-163 C^0, yield 72%) and by (FT-IR, UV/Vis) spectrum identified compound [1]. Characterized compound [1] as shown infrared spectrum moderate packs when frequency (1620cm-1) is the absorption band (C = N) to ring thiadiazole, 752cm-

[1]due to υ (C=S) add to the appearance of a group of characterize packets are shows Table (3).

The characterize compound [S1] using UV spectrum, Figure (1), which showed absorption packages at wavelengths (203-208nm) and attrib-uted to electronic transitions (π-π*) in addition to the appearance of absorption packages when (325-303nm) attributed to electronic transitions (n-π *).

Compound [2] was preparing from reaction one mol of compound [1] with (2mol) from thiosemicarbazide in presence of ethanol as solvent. Physical properties to compound [2] listed in Table (1) characterize of compound [2] by IR spectroscopy (FTIR) spectra of the ultraviolet and visible (UV-Vis). FT-IR spectrum of compound [2)] showed disappearance absorp-tion band (SH) and appearance absorption band at (3367-3271cm^{-1}) due to υ (NH_2) symmetric and asymmetric. Table (3) explains other absorption band for compound [2]. As for UV spectrum and visible (UV-Vis) compound [2] showed absorpti-on peak at (361,278) nm and (245,228) nm back to the electronic transfer (n-π*) and (π-π*), respect-tively compound [3] preparation from reaction compound [2] with chloroacetyl chloride presence pyridine. Table (1) explained physical properties to compound [3] characterize compound [3] by (FT-IR) spectrum and characterized that compou-nd in the 1H-NMR spectrum. In FT-IR Figure (3) showed absorption band at (3425) cm^1 due to υ(OH) result (Keto -Enol) tautomerism, at (1666-1620)cm^{-1}due to υ(C=N). Other value characters showed in Table (3). In H-NMR spectrum Figure (6) showed the singlet signal at (1.18) ppm was attributed to (CH) proton that resulted from tautomersm, and in (11.73) ppm appearance one singled return to (OH) which was result (Keto -Enol) tautomerism. Table (6) showed the rest of the absorption band to compound [3]. Diagnoses compound [3] in UV spectrum and vis-ible (UV-Vis) Figure (2) appearance absorption band at (568,251) nm, (227-217) nm return to the electronic transfer (n-π*) and (π-π*), respectively.

Table 3: Spectral Data of Compounds [1, 3]

Comp. No	Characteristic bands of FTIR Spectra. (cm^{-1})					
	υ(NH)	υ(C=N)	υ(N-N)	υ(C-N)	υ(C-S)	others
[1]	3251 3143	1620	1508	1408	752	υ(S-H)2576 υ (C=S)1273
[2]	3178	1643 1620	1531	1311	756	Sym.NH2(3367) Asym.NH2(3271)
[3]	3336 3201	1666 1620	1562-1543	1458	717	υ(C-H)$_{aliph.}$ 2970-2931 υ(OH)3425

Compounds [4,5] product from reaction of compound [3] with (urea and thiourea) respect-ively. These compounds have physical properties explained in Table (1). Characterized compounds [4, 5] by FT-IR spectrum noted the appearance

Table 4: Spectral Data of Compounds [4, 5]

Characteristic bands of FTIR Spectra. (cm^{-1})								
Comp. No	υ(NH)	υ(C-H) arom.	υ(C-H) aliph.	υ(C=N)	υ(C-N)	υ(C-S)	υ(N-N)	υ(other)
[4]	3190	3010	2881	1666	1288	763 906	1543-1508	Sym.NH_2(3336) Asym.NH_2(3217) υ (C=C)arom.(1469)
[5]	3150 3190	3085	2970 2924	1685	1373-1408	786	1496	Sym.NH2(3402) Asym.NH2(3271) υ (C=C)arom.(1612)

Schiff base compound production from treatment compounds [4,5] respectively with derivation aldehyde compounds even give produce Schiff base compounds [6-9] as pointed out in the Scheme (1 and 2). Table (2) shows physical properties to Schiff base compounds.

Table 5: Spectral Data of Compounds [6-9]

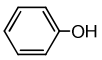
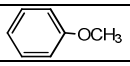
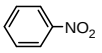
Characteristic bands of FTIR Spectra. (cm^{-1})										
Comp. No	**Ar.**	**υ(NH)**	**υ(C-H) ar.**	**υ(C-H) aliph.**	**υ(C=N)**	**υ(C-N)**	**υ(C-S)**	**υ(N-N)**	**υ(C-O)**	**υ(other)**
[6]		**3155 3116**	**3089**	**2927**	**1666 1651**	**1334**	**771**	**1489**	**-**	**υ (C=C) (1535-1554) (C-O-C)1273**
[7]		**3248 3197**	**3089**	**2970 2931**	**1654**	**1384**	**756**	**1516**	**1130**	**υ(OH) (3429) $\upsilon(C=C)_{arm.}$(1562) υ(C-O-C)(1246)(1269)**
[8]		**3348 3321**	**3014**	**2931**	**1635**	**1400**	**721**	**1512**	**1130**	**$(C=C)_{arom.}$ 1540-1555**
[9]		**3344 3147**	**3010**	**2978 2927**	**1666**	**1400**	**721**	**1481**	**-**	**(NO_2)sym.1350 (NO_2) asym.1531 $(C=C)_{arm.}$1616**

Table (5) explain all characterized packages compound [6] Figure (7) characterized by (H-NMR) spectra in (1.19) ppm showed singled bake to (CH) proton and (multiple signals) at (7.45-6.89) return to aromatic protons. All value characterized explain in Table (6).

Table (6): [H.N.M.R] Spectral Data of Compounds [3-6]

Comp. No.	Molecular Formula	Chemical Shift	Group
[3]	**$C_8H_6N_8SCl_2O_2$**	**δ=(1.18) δ=(3.79) δ =(10.20-10.40)**	**(s,2H,2CH) (S,2H,$2CH_2$.) (S,2 H, 2 NH $_{amide}$)**
[6]	**$C_{24}H_{14}N_{12}O_2S$**	**δ=(7.45-6.89) δ=(3.29) δ=(1.19)**	**(m,10H,2(CHC_6H_4) (S,2H,2NH) (S,2H,2CH)**

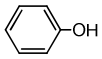
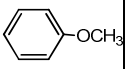
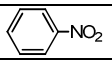
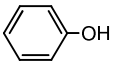
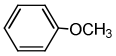
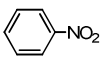
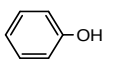
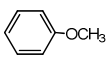
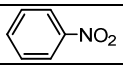
new band of (3336-3190) cm^{-1}due to υ (NH_2) symmetric and asymmetric belong to compound [4] and (3402-3271) cm^{-1}result to υ (NH_2) symmetric and asymmetric return to compound [5]; Figure (4) in addition to other characterized pack-agees are set out in the Table (4).

These compounds diagnosed by (FT-IR), in general observed disappearance pack absorption (NH_2) symmetric and asymmetric and appearance absorption band to (N= CH) group.

β- Lactam compounds [10-13] preparation in this work from reaction Schiff base compound in (DMF) with (chloroacetyl chloride). These carried out lined in Scheme (1 and 2) studied physical properties to these compounds and listed in Table (2), characters by (FT-IR), (H-NMR), UV spectrum, visible (UV-Vis), and (C.H.N.S). In (FT-IR) spectrum disappearance band (azome-thine) group and appearance band (β-Lactam) ring in all β-Lactam compounds occurring (Keto-Enol) (tautomerism). Table (7) explains all characterized packages for β-Lactam derivative, Figure (5) back to compound [12]. Tetrazole compounds [14-17] preparation from treatment of Schiff base with sodium azide in THF as shown in Scheme (1 and 2). Physical properties exist in the literature outlined in Table (2). Tetrazole compounds was diagnosed by FT-IR spectrum, H-NMR spectrum, C.H.N.S spectrum, UV spectrum and visible (UV-Vis), broadly in

characterized (FT-IR) spectrum observed clear disappearance group and occurrence tetazole ring. Diagnostic values for tetrazole compounds [14-17] shown in Table (7). Thiazolidinone compounds [18-21] preparation from reaction Schiff base compound with merca-ptoacetic acid shown lined in Scheme (1 and 2). In the literature physical properties to these compounds exist in Table (2). Thiazolidinone compound diagnosed by (H-NMR, FT-IR, UV-VIS, C.H.N.S). It observed through characterized (FT-IR) to compound thiazolidinone not showing up band (N=CH) group and the emergence of new pack is (thiazolidinone) ring. It is worth mentioning in this diagnosis take place phenomenon (toutom-irsm) which included transfer (keto to enol). All value characters thiazolidinone compound in Table (5). Compound [18] [$C_{28}H_{18}N_{12}O_4S_3$] charac-terrized by C.H.N.S and the results were [C; 49. 4(49.2)-; H, 2.6 (2.3); N, 24. 6 (24.5); S, 14.1(13.1).

Table 7: Spectral Data of Compounds [10-21]

Characteristic bands of FTIR Spectra (cm^{-1})										
Comp. No	**Ar.**	**υ(NH)**	**υ(C-H) ar.**	**υ(C-H) aliph.**	**υ(C=N)**	**υ(C-N)**	**υ(C-S)**	**υ(N-N)**	**υ(C-O)**	**υ(other)**
[10]		3379 3305	3010	2927 2858	1627	1330	794	1508	1157	υ (C=C) (1552) υ (OH)(3421) υ(C-Cl)(717) υ(C-O-C)(1273)
[11]		3190 3151	3082 3055	2927 2858	1670 1635	1342	767	1465	1157	$\upsilon(OH)_{broad}$ (3417-3379)υ ν(C=C)(1508) ν(C-O-C)(1249)
[12]		3178	3082 3055	2927	1635	1404	783	1465	1141	$\upsilon(OH)_{broad}$ υ (3425) ν(C=C)(1543) $\upsilon(OCH_3)$(883) (C-Cl)(721)
[13]		3178	3078	2924	1631	1415	790	1458	1145	(NO_2)sym.1350 (NO_2) asym.1527
[14]		3429 3394	3010	2970.	1635	1350	756	1454	-----	υ (Azid group) (2137-2048) υ(C=C)(1608) υ(N=N)(1134) υ(C-O-C)(1238)
[15]		3417 3367	3087	2927 2858	1670 1647	1396	759	1508	1037	υ (Azid group) (2160-2048) υ(C=C)(1604) υ(N=N)(1138) υ(C-O-C) 1234
[16]		3421 3228	3010	2927 2858	1658 1627	1404	790	1512	995	υ (Azid group) (2160-2048) υ(C=C)(1562) υ(N=N)(1141)
[17]		3429 3201	3010	2927	1697 1651	1404	771	1458	-----	υ (Azid group) (2160-2048) υ(C=C)(1558) υ(N=N)(1138) (NO_2)sym.1350 (NO_2) asym.1531
[18]		3186 3151	3010	2924	1681 1627	1396 1419	794	1458	1134	υ(OH)(3317) υ(C=C) (1589-1543) υ(C-O-C)(1238 $\upsilon(S\text{-}CH_2)$(1435)
[19]		3186 3155	3010	.2924	1678	1392 1415	759	1458	1134	υ(OH)(3371- 3332) υ(C=C)(1589) υ(C-O-C)(1246 $\upsilon(S\text{-}CH_2)$(1392- 1381)
[20]		3186	3010	2927 2858	1672	1392	798	1512	1130	υ(OH) (3394) υ(C=C)(1612) $\upsilon(S\text{-}CH_2)$ (1300)
[21]		3201 3155	3010	2927	1693 1670	1396	779	1489	1130	υ(OH) (3394) υ(C=C)(1612)

										$\upsilon(S\text{-}CH_2)(1392\text{-}1350)$ $(NO_2)_{sym}.1350$ $(NO2)_{asym}.1527$

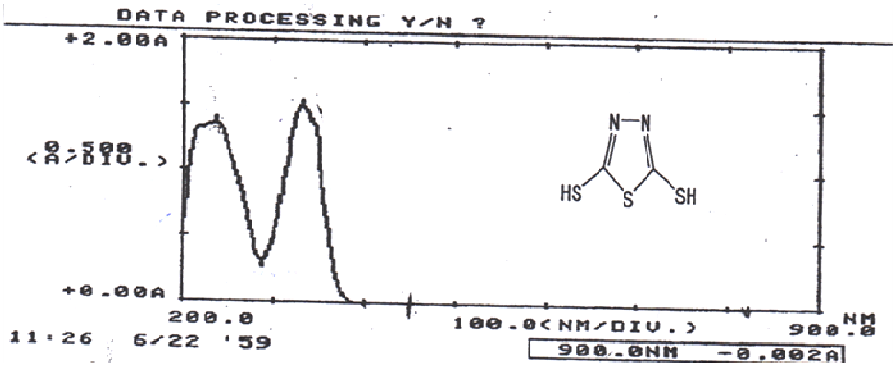


Figure 1: UV Spectrum of Compound [1]

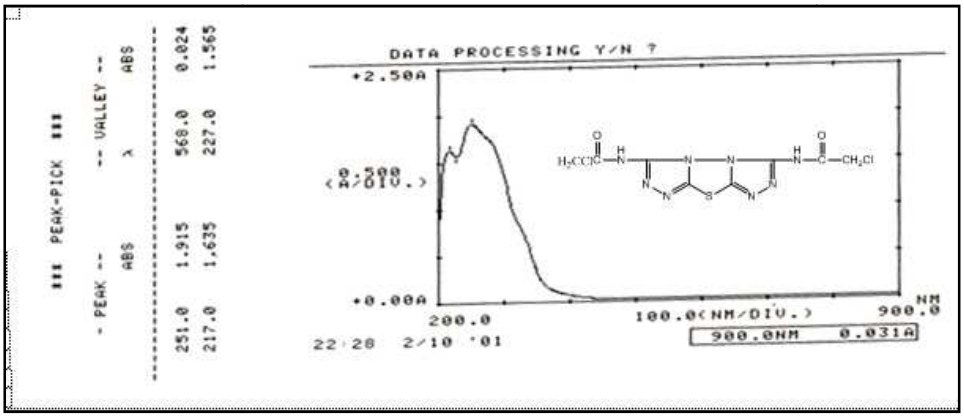


Figure 2: UV Spectrum of Compound [3]

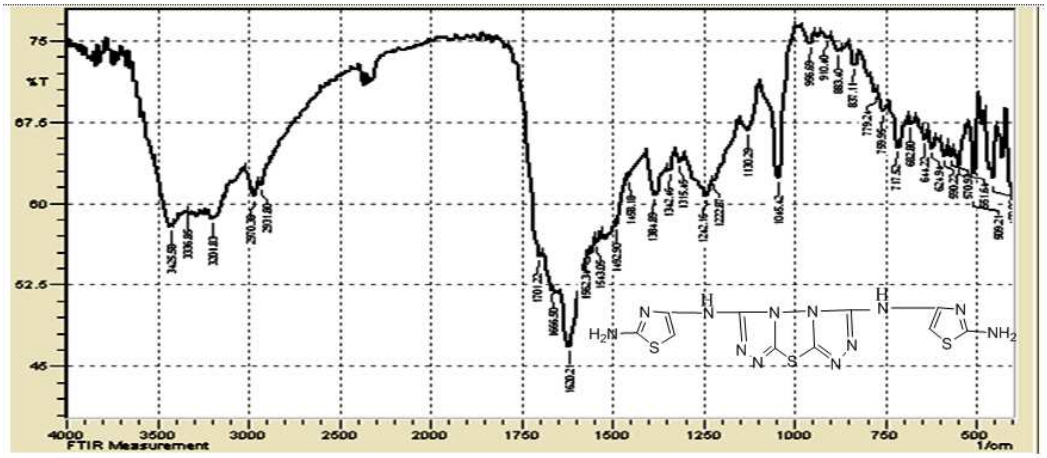


Figure 3: FT-IR Spectrum of Compound [3]

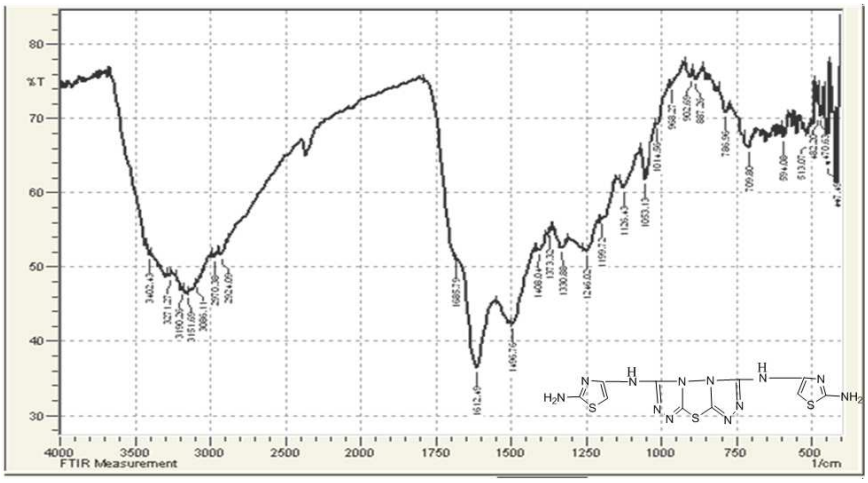


Figure 4: FT-IR Spectrum of Compound [5]

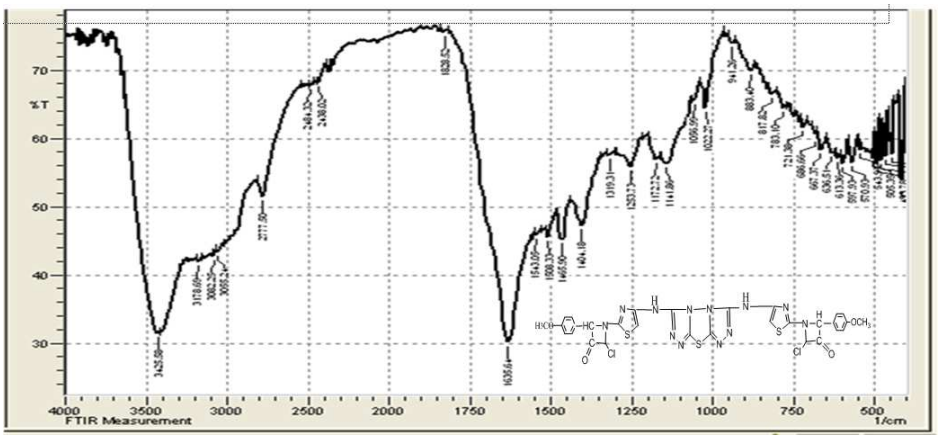


Figure 5: FT-IR Spectrum of Compound [12]

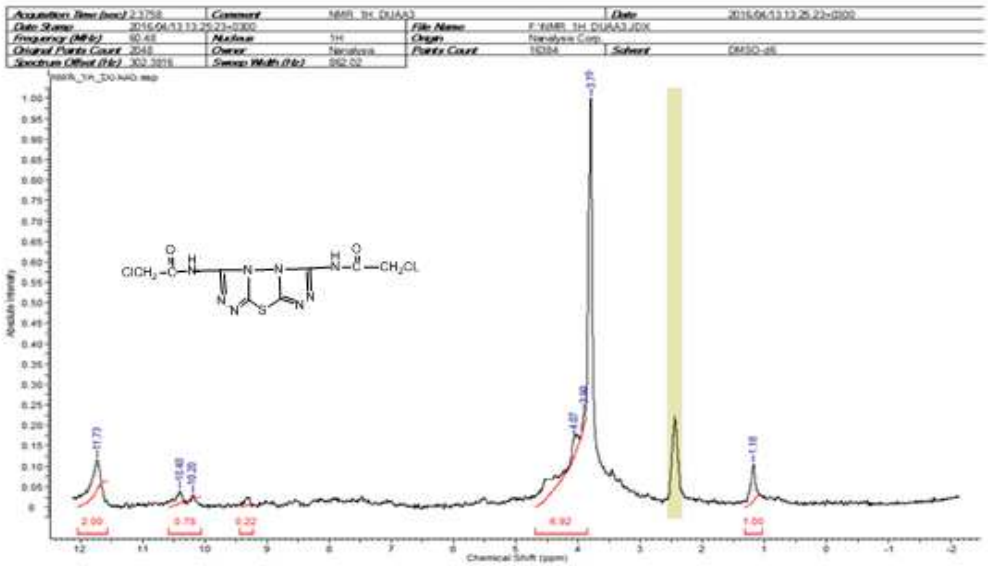


Figure 6: 1H.N.M.R Spectrum of Compound [3]

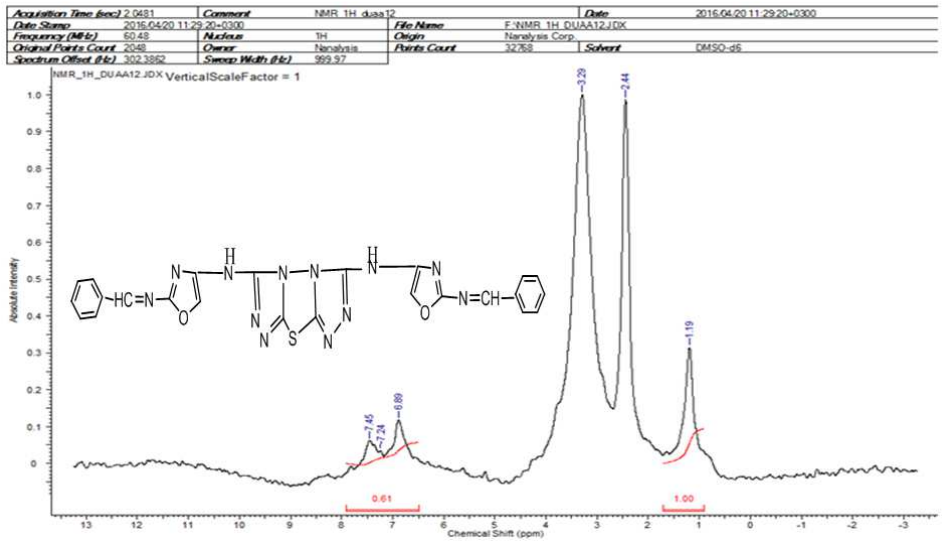


Figure 7: 1H.N.M.R Spectrume of Compound [12]

CONCLUSIONS

Through Schiff base starting from (2,5 dimercapto 1,3,4 thiadiazole) were able to prepare red new derivation as (β-Lactam, thiazolidinone, tetrazole). These derivative compounds have great importance results of the used in pharmaceutical compositions and industrial applications especially coloring and paint

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