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Synthesis, Identification of Heterocyclic Compounds and Study of Biological Activity

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ABSTRACT:

The aim of this work , synthesis of various hetero cycles (three, four, five, six, seven, and eight) –membered ring , containing one or more of hetero atoms as (N, S, O). This work involved five part **,** first part included synthesis of compounds (1-5) derived from cysteine when react with hydrazine , followed by electrophilic reactions to yield (aziridine **,**diaziridine **,**diazetidine, isoindole**,** diazine) derivative . In second part ,the compound (6-14) was synthesized from reaction of phenylene diamine with carbondisulfide or glycine with phthalic anhydride to yield (thiazetidine,thiazepine, thiazolidine, diazirine,diazocin, benzimidazole, isoindole) derivatives .Third part, involved synthesis of triazole derivatives (17) from azotation of 1,3,4-thiadiazole to give (azo-imine) compound (16) , followed by cyclization reaction. Four part involved synthesis of several hetero cycles from reaction of 1, 3,4-thiadiazole with sugars (xylose, arabinose, ribose), then reacted with (o-thiol benzoic, glycine, salicylic acid) to produce the compounds (18-23) . Five parts involved study of biological activity of some compounds. The structure of these compounds were characterized by (H.NMR ,FT.IR ,C.H.N) techniques and their melting

KEYWORDS: Thiadiazole, sugar , triazole, three-membered ,seven-membered, eight-membered.

INTRODUCTION:

The hetero cycles important due to their chemical, biological, and technical significance, the hetero cyclic compounds occur widely in natural and in araviety of non – naturally occurring compounds(1-3) .

Various compounds such as alkaloids (4) antibiotic, essential amino acids(5) ,vitamin , hormone , hemoglobine , and large number of dyes (6) and synthetic drugs (7) contain hetero cyclic ring systems .

In this study, various of three –membered hetero cycles synthesized such as aziridine, which have been widely used as structural units in the natural products and in different pharmaceutically important molecules act as anti-cancer activity(8,9) . one of four –membered rings which also synthesized is diazetidine , represent an important moiety in organic and medicine chemistry(10). several five –membered ring included in this study such as 1,3,4-thiadiazole , thiazolidine , and benzimidazole , these compounds have broad ring of applications in medicine because of them biological activity , like thiadiazole used as antibiotic, anticancer, antifungal, and anti-microbial(11,12)

.thiazolidinones are represent important structural unitindrug discovery , which use as anti- inflammatory, anti-HIV , and anti- convulsant (13) Benzimidazol derivative also play important role in medical fields as anti cancer, anti- fungal , anti micro 1 , and antiviral (14,15) Thiazepine as seven –membered ring synthesized in this work , which present in a wide ring of natural and synthetic biologically active agents , used as enzyme in hibitors , anticonvulsant , anti- cancer , and other medicine uses (16,17) .

EXPERIMENTAL:

Melting point were recorded with–stuart melting point apparatus & were uncorrected. Infrared spectra (FT.IR) were recorded on Shimadzu FT.IR -8300 spectro photometer, H.NMR spectra were recorded on a Bruker - 400 MHZ – Operating at 300 MHZ with tetramethyl silane as internal standard in DMSO –d6 as a solvent, measurements were made in Kashan University. Element Analysis (C.H.N)., Thin layer chromatography (TLC) was carried out by using alumina plates percolated with silica – gel , supplied by Merck .Comp. spots were detected with iodine va pour . biological study in science college of kufa university.

Synthesis of compounds [1-5] :

A mixture of cysteine (0.01mole , 1.2gm) and hydrazine (0.02mole , 1.38ml) with drops of glacial acetic acid was refluxed for (hrs) , then the precipitate was filtered off and re crystallized from ethanol to yield (86%) of compound [1], which (0.01mole) reacted with (0.03mol) of

(dichloromethylene, oxalic acid, dichloroethylene, phthallic acid) in ethanol absolute to produce (84, 81, 83, 84) % of compounds [2-5] respectively .

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Synthesis of compounds [6-9]:

Mixture (0.01mole) of o-phenylene di amine and (0.02mole) of carbondisulfide were refluxed in presence of absolute ethanol for (hrs) to result compound [6] , which (0.01mol) reacts with (0.02mol) of (dichloromethylene, malic acid , oxalic acid) in ethanol absolute to result (80 , 82 , 81) % of compounds [7-9] respectively .

Synthesis of compounds [10-12]:

A mixture of (0.01mole) of phthallic anhydride and (0.01mole) of glycine was refluxed for (hrs) , then the precipitate was filtered off and re crystallized from acetone to yield 82% of compound [10] , which (0.01mole) reacted with (0.01mole) of (hydrazine , o-phenylene di amine) in presence of hydrochloric acid to produce (84 , 80)% of compounds [11-12] respectively .

Synthesis of compounds [13-14]:

Equimolar mixture of compound [10] (0.01mole) and o- phenylene di amine was refluxed for (hrs), then the precipitate was filtered off and re crystallized from ethanol abs . to yield 81% of compound [13] , which (0.01mole) reacted with maleic acid in presence of ethanol as solvent to produce 85% of compound [14] .

Synthesis of compounds [15-17] :

A mixture of semicarbazide (0.01mole) and (0.02mole) of carbon disulfide were reacted in refluxing for (16hrs) in presence of potassium hydroxide to produce thiadiazole [15] , which dissolved in (2ml) of hydrochloric acid with solution of sodium nitrite in (0-5)C$^{\square}$, then added ethanolic solution of m-amino phenol to the mixture , after (48hrs) the participate was filtered dried to give (89%) of compound [16], which refluxed in presence of pyridine with copper acetate for (6hrs) to give (85%) of compound [17] .

Synthesis of compounds [18-20]:

Equimolar mixture of compound [15] (0.01mole) and (ribose , xylose , arabinose) respectively were refluxed for (3hrs) in ethanol abs . and presence of drops from glacial acetic acid to produce Schiff bases [18-20] respectively .

Synthesis of compounds [21-23] :

Equimolar mixture of compound [18] or compound [19] or compound [20] (0.01mole) respectively and (salicylic acid, o- thiol benzoic acid , glycine) respectively were refluxed for (6hrs) in presence of benzene , the precipitate as filtered off and re crystallized to give (80 , 82, 80)% of compounds [21-23] respectively.

RESULTS AND DISCUSSION:

Various class of the organic compounds like (amino acid , azo compounds , amine , sugars , ….) are used as essential material in synthesis of {(aziridine , diaziridine , diazirine) as (three-membered ring)} , {(diazetidine , thiazetidine) as (four-membered ring)} , {(1,3,4-thiadiazol) (thiazolidine ,benzimidazole , triazole ,…) as (five-membered ring thiazine)} , {(oxazine , diazine) as (six-membered ring)}, {(thiazepine)as (seven–membered ring)} and {diazocine as (eight-membered ring)}.

All synthesized compounds [1-23] have been characterized by their melting points and spectroscopic methods like (FT.IR) and (C.H.N)- analysis and some of them by ^{1}H- NMR)-spectra .

FT.IR –spectra , showed an absorption bands at (1676)cm- 1 (-CO-NH) amide ,(3348,3230) cm-^{1} due to amine groups in compound (1)[18], which disappeared in compounds [2-5] due to formation of cycles . bands at (2711)cm-^{1} (SH), (3431)cm^{-1} to (NH) of amine group in compound (6) , which disappeared and other bands appeared like [1334 cm^{-1} to (-S-CH$_2$)] in compound (7)[19] ., [1660 cm-^{1} to (CO-N) amide] in compound (8) , [1664 cm^{-1} to (CO-N) amide] in compound (9) ., bands at (2590 -2750) cm-1 to (OH) of carboxylic acid , (1734)Cm-1 to (C=O) carbonyl group in compound (10) [20] , which disappeared and other bands appeared as [3352 cm^{-1} to NH of amine , 1591cm^{-1} (C=N) end cycle of diazirine] in compound(11) [21] [3304 cm^{-1} (NH) of amine , 1608 cm-^{1} (C=N) endo cycle of benzimidazole] in compound(12) ., [3230 ,3348 cm^{-1} to amine groups] in compound (13) , which disappeared in compound (14) due to formation of diazocine ring .

[3431 cm-^{1} (NH) amine , 1599cm^{-1} (C=N) endo cycle of thiadiazole , 812 cm^{-1} (C-S) ,(1369)cm^{-1} (N-N) endo cycle] in compound (15) [22] ., [3416, 3431 cm^{-1} (NH$_2$) , 1446- 1494 cm^{-1} (N=N) azo group] [23] , which disappeared and other bands appeared like [1286 cm^{-1} due to (C=N-N) , 1317cm-^{1} to (N-N-N) endo cycle] due to formation of triazole cycle in compound (17) bands at [(1620) , (1624), (1612) (CH=N) amine group] in compounds (18-20) [24] , which disappeared and other band appeared such as [(1695) cm^{-1} (CO-N) amide , (1195 cm^{-1}) (C-O-C)] in compound (21 , [1681 cm^{-1} (CO-N) amide , 1298 cm-^{1} (S-CH)] in compound

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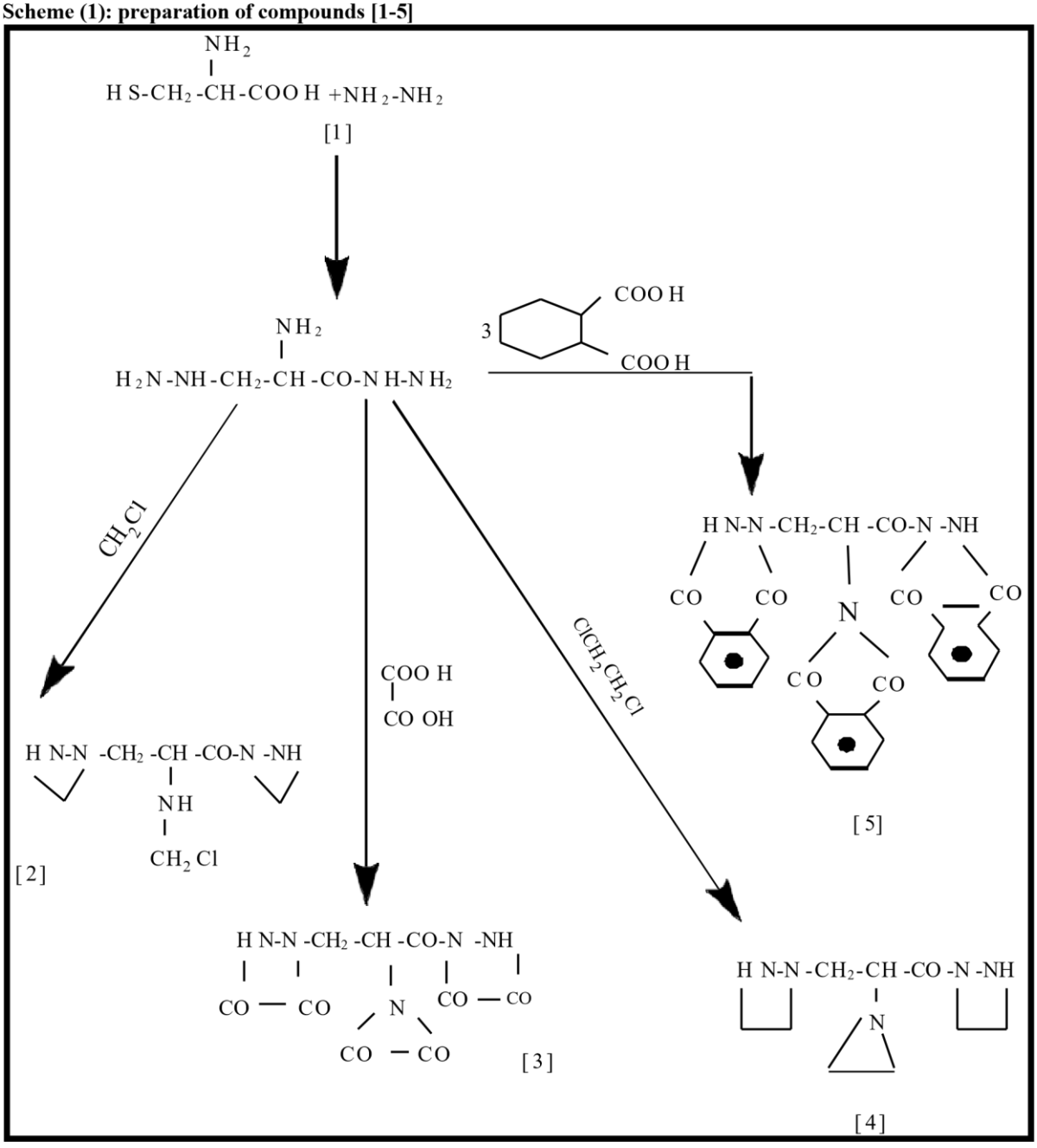
(22) [1682 cm-^{1} (CO-N) ,3296 cm-^{1} (NH) amine group] in compound (23) , this due to formation of hetero cycle . Table (1) ,and Figures (1-5)

Scheme (1): preparation of compounds [1-5]



Scheme (2): preparation of compounds [6-9]

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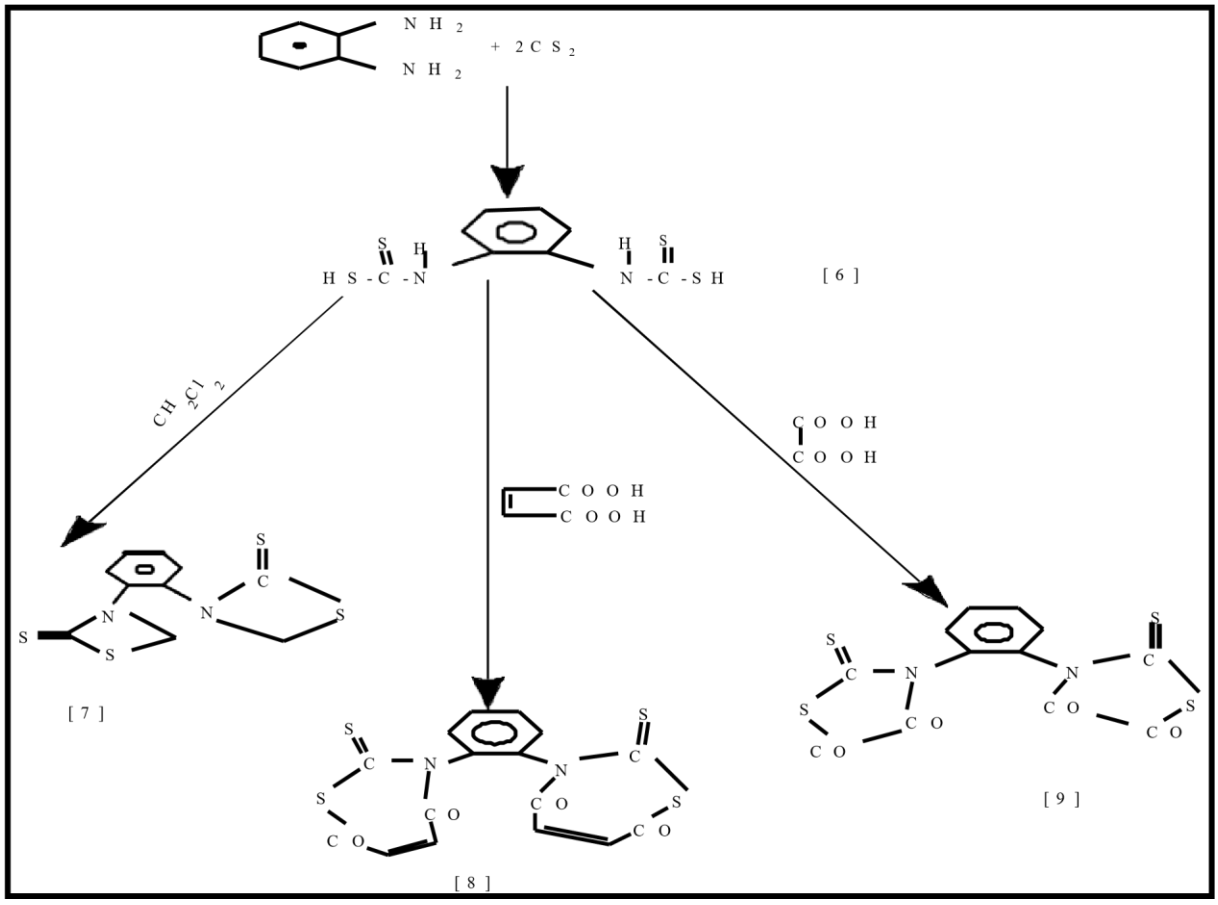
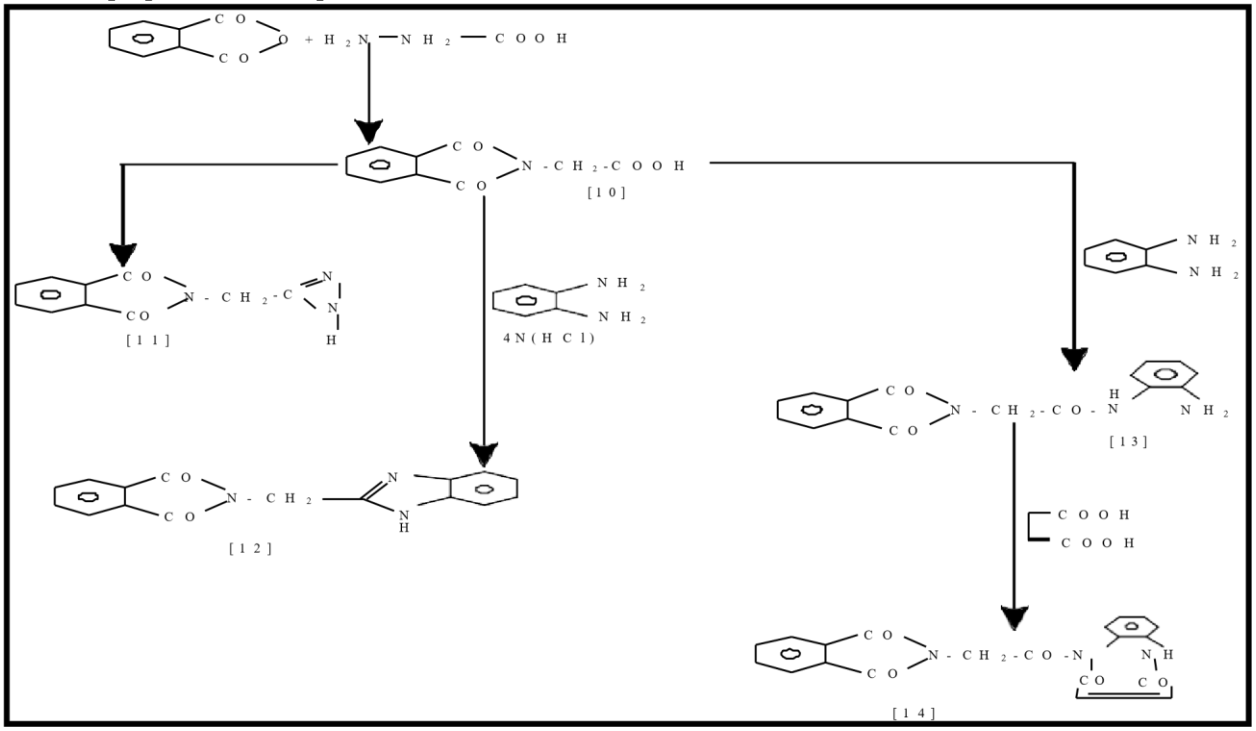


Scheme 3:preparation of compounds [10-14]



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Scheme(4) : preparation of compounds [15-23]

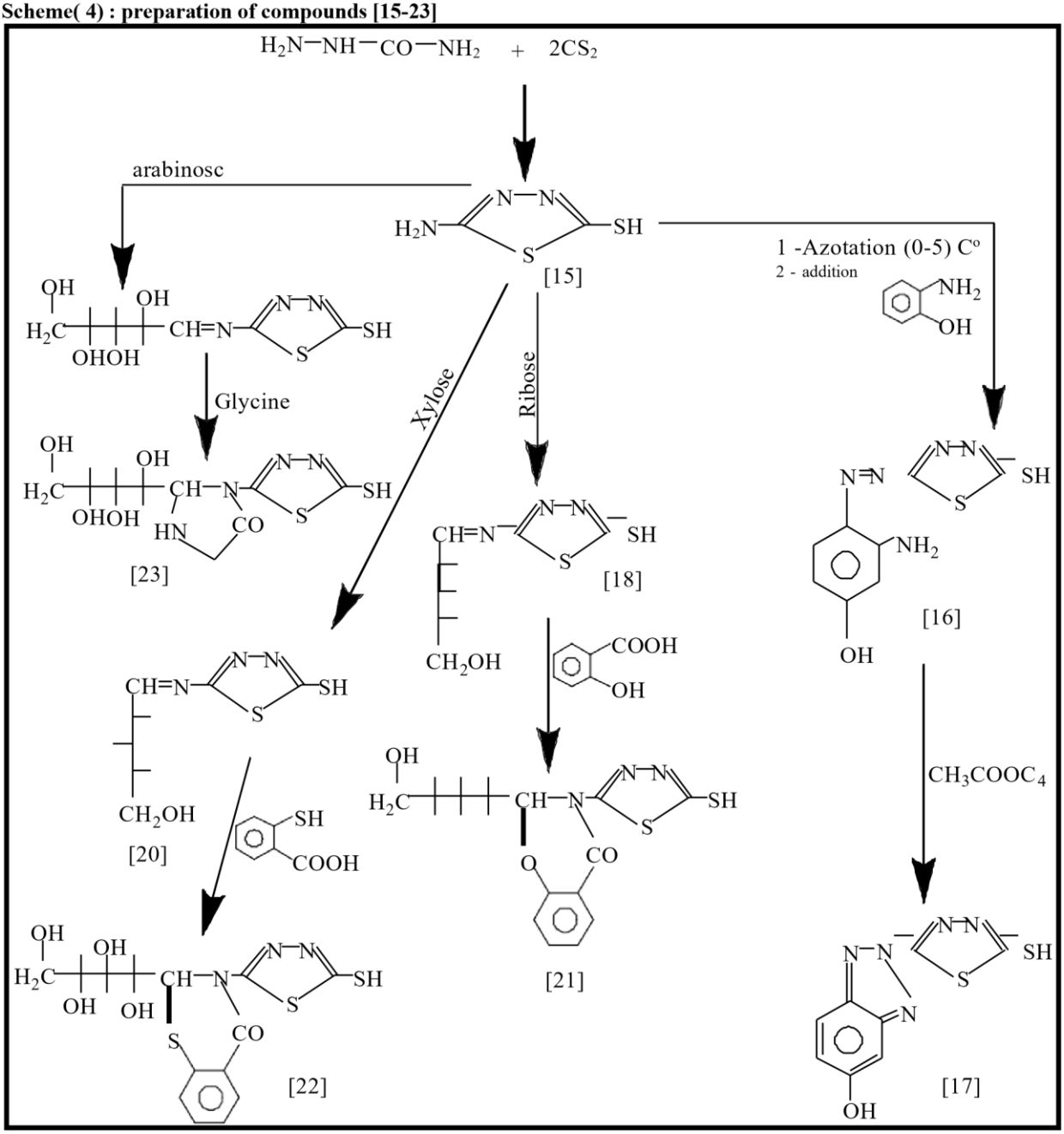

Table (1) : FT.IR –data (cm^{-1}) of compounds [1-23]

Comp. No	I.R $_{(KBr)}$ (only important groups)
[1]	(3348,3230cm^{-1}) to (HN-NH_2)of hydrazine group, (3061cm^{-1})to (-CH-) aliphatic, (1676cm^{-1}) to (-CO-NH) carbonyl of amide
[2]	(3431cm^{-1}) to(-NH-) of amine , (2950cm^{-1})to (-CH-) aliphatic ,(1686cm^{-1})to (-CO-NH-) carbonyl of amide , (846cm^{-1})to (C-Cl)
[3]	(3352cm-1 to (-NH-) of amide , (3005cm^{-1}) to (-CH-) aliphatic , (1680cm^{-1}) to (-CO-NH) carbonyl of amide

[4]	(3404cm^{-1})to (-NH-) of amine , (2990cm^{-1}) to (-CH-) aliphatic ,(1695cm^{-1}) to (CO-N-)carbonyl of amide
[5]	3416cm^{-1}) to (-NH-CO-) of amide , (3012cm^{-1}) to (-CH-)aliphatic , (1689cm^{-1}) to (-CO-N-) of amide
[6]	(3431 cm^{-1}) to (-NH-) of amine , (2711 cm^{-1}) to (-SH) , (1228 cm-1) to (C=S) thion group
[7]	(2976 cm^{-1}) to (-CH-) aliphatic , (1334 cm^{-1}) to (-CH_2-S-) ,(1103 cm^{-1}) to (C=S)
[8]	(3103 cm^{-1}) to (-CH=CH-)alkene , (1660cm^{-1}) to (-CO-N-) carbonyl of amide (1163 cm^{-1}) to (C=S)
[9]	(1664 cm^{-1}) to (-CO-N) carbonyl of amide , (1078 cm^{-1}) to (C=S)
[10]	(2960cm^{-1}) to (-CH-) aliphatic ,(2590-2750cm^{-1}) to (-OH) of carboxylic acid ,(1734cm^{-1}) to (-CO-O-) of carboxylic acid , (1695cm^{-1})to (-CO-N-)of amide
[11]	(3352cm^{-1})to (-NH) of amine,(2877cm^{-1}) to(-CH-) aliphatic (1680cm^{-1})to (-CO-N-) of amide ,(1591cm^{-1})to (C=N) endo cycle
[12]	(3304cm^{-1})to (-NH-) of amine ,(2935cm^{-1})of (-CH-) aliphatic ,(1685cm^{-1}) to (-CO-N-)of amide ,(1608cm^{-1}) to(C=N) endo cycle of benzimidazole
[13]	(3230 ,3348 cm^{-1}) to (-NH_2) of amine , (2900 cm^{-1}) to (-CH) aliphatic , (1676cm^{-1}) carbonyl of amide
[14]	(3431cm^{-1}) to(-NH) of amide ,(3022cm^{-1})to (CH=CH) alkene ,(2922cm^{-1})to (-CH-) aliphatic ,(1684cm^{-1}) to (-CO-N-) carbonyl of amide
[15]	(3468 ,3419 cm^{-1})to (-NH-) of amine ,(2295cm^{-1}) to (-SH), (1599cm^{-1}) to (C=N-) endo cycle of thiadiazole ,(1369cm^{-1}) to (N-N=C) endo cycle
[16]	(3657cm^{-1})to (-OH), (3416cm^{-1}) to (-NH_2) of amine ,(2374cm^{-1}) to (-SH) (1604cm^{-1})to (C=N-) endo cycle of thiadiazole, (1446,1494cm^{-1}) to(-N=N)azogroup
[17]	(3466cm^{-1})to (OH) ,(2362cm^{-1})to (-SH),(1598cm^{-1})to (C=N) endo cycle,(cm^{-1}) to (C=N-N)endo cycle of triazole ,(842cm^{-1})to (C-S) endo cycle of thiadiazole
[18]	(3468cm^{-1})to (OH) of sugar (2827cm^{-1})(-CH-) aliphatic (2335cm^{-1})to (-SH), (1620cm^{-1})to (-CH=N-)of amine ,(1583cm^{-1})to(C=N)endo cycle of thiazole
[19]	(3444cm^{-1})to (OH) of sugar ,(2900cm^{-1})to (-CH) aliphatic ,(2362cm^{-1})to SH ,(1624cm^{-1})to (CH=N)of amine ,(1585cm^{-1})to (C=N)endo cycle of thiadiazol
[20]	(3340cm^{-1})to (OH) of sugar (2890cm^{-1})to (-CH) aliphatic ,(2250cm^{-1})to (-SH) (1612cm^{-1})to (CH=N)of amine ,(1587cm^{-1})to (C=N)endo cycle of thiadiazole (829cm^{-1})to (C-S) endo cycle
[21]	(3471cm^{-1}) to (OH) of sugar (2350cm^{-1})to (-SH) (1695cm^{-1})(CO-N)amide ,(1580cm^{-1})to(C=N) endo cycle of thiadiazole (1195cm^{-1})(C-O-C)
[22]	(3406cm^{-1})(OH)of sugar ,(2939cm^{-1})to (CH)aliphatic ,(2240cm^{-1})to (SH),(1681cm^{-1})(CO-N) amide ,(1600cm^{-1})(C=N)endo cycle of thiadiazole ,(1298cm^{-1})(S-CH),(748cm^{-1})(C-S) endo cycle
[23]	(3562cm^{-1})(OH)of sugar ,(3296cm^{-1})(-NH) of amine ,(2998cm^{-1})(-CH)aliphatic ,(2300cm^{-1})(SH) ,(1682cm^{-1})to (CO-N)endo cycle ,(1597cm^{-1})(C=N) endo cycle of thiadiazole

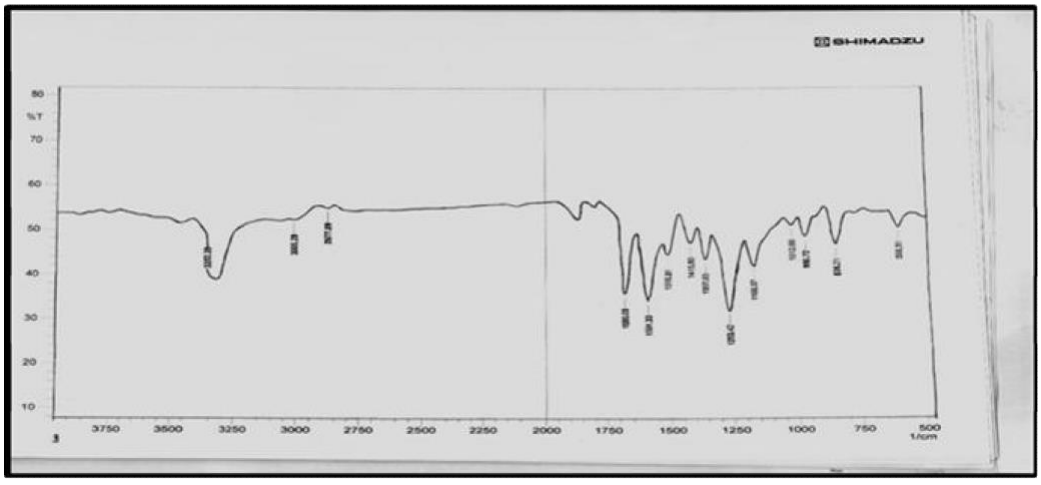

Fig (1) : FT.IR –Spectra of Compound [3]

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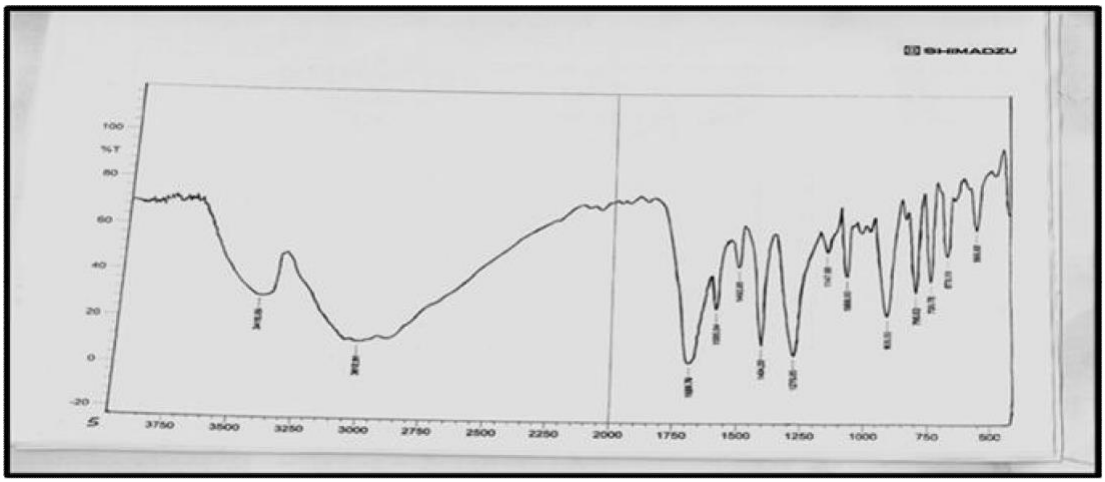

Fig (2) : FT.IR –Spectra of Compound [5]

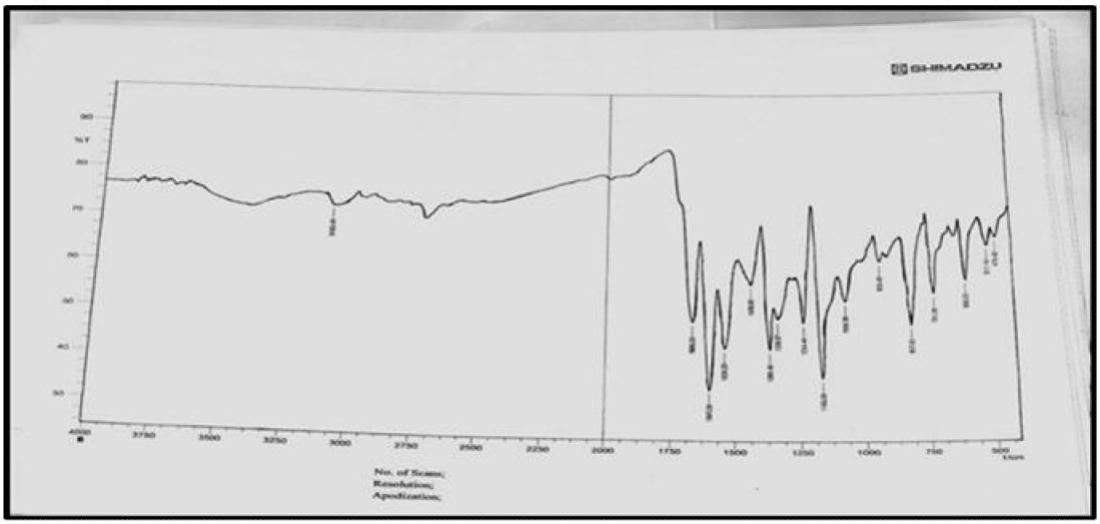

Fig (3) : FT.IR –Spectra of Compound [8]

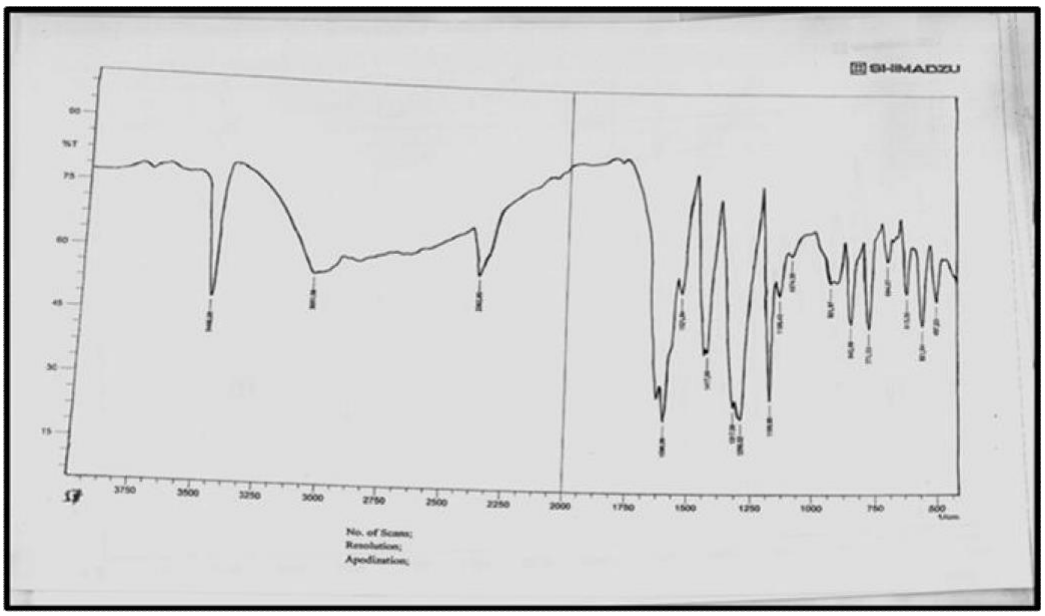

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Fig (4) : FT.IR –Spectra of Compound [17]

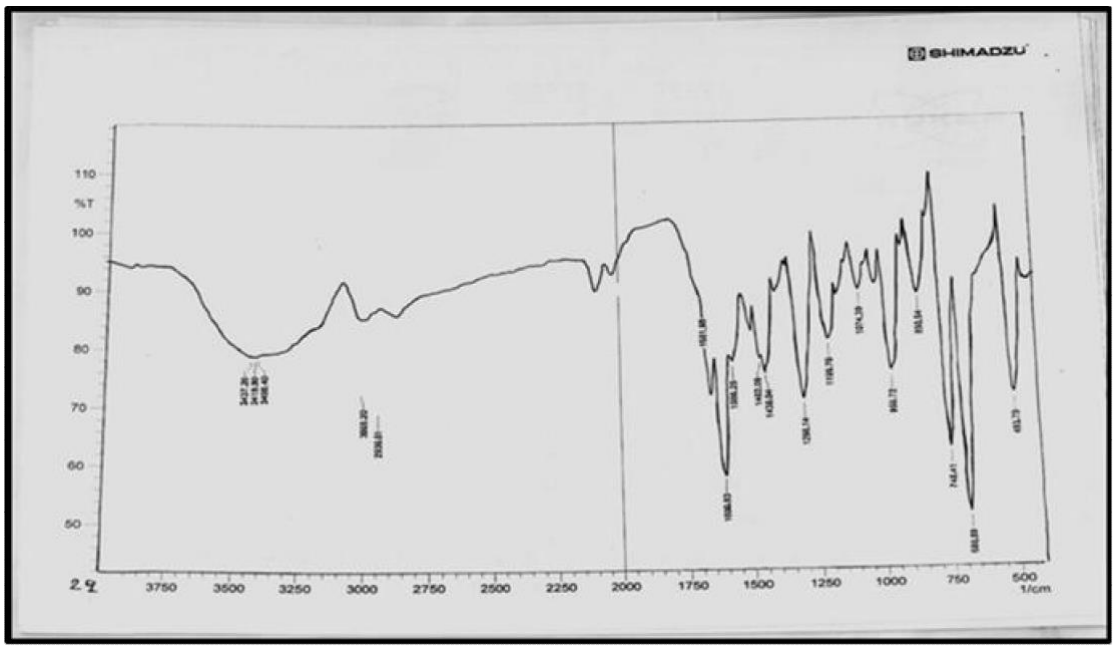

Fig (5) : FT.IR –Spectra of Compound [22]

H.NMR – Spectra showed signals and peaks due to protons of functional groups in some synthesized compounds in Table (2) ,and Figures (6-10).

Table (2): ^{1}H-NMR-data (ð ppm , DMSO) of some compounds

Comp No.	H.NMR (only important peaks).
[2]	3.934(NH-CH_2Cl) .,2.48(N-CH_2-NH) of three- membered ring (di aziridine) .,(2.21., 1.81, 1.72)for protons of (N-CH_2.CH-).
[5]	9.69(1 H,-CO-NH) amide ,(7.22-7.63)protons of phenyl rings ,(2.01,2.17) triplate signal for proton of (-CH-CH_2-).,(2.42, 2.48)(doublet signal of (-CH_2-CH-).
[7]	7.15 (protons of phenyl ring ., 2.92 protons of (N-CH_2-S) of four membered ring .
[11]	4.29 proton of (-NH-)of diaziridine ring ., 2.48 protons of methylene (N-CH_2C=N-)., 7.89 protons of phenyl ring .
[12]	3.59(NH) of benzimidazol cycle ., 2.46(-CH_2-) group ., (6.985-7.82 protons of phenyl rings.
[13]	10.46 (1H, -CO-NH-) of amide ., 3.59(1H, ð, NH_2) protons of amine ., 2.43(-CH_2) of methylene group ., (7.37-7.45)protons of phenyl rings .
[17]	10.166(1H, OH) of phenol ,(6.48-7.68)protons of phenyl ring , 5.582 of (NH_2) 5.93(SH)
[18]	10.54 (1H, OH) of phenol ., (7.38-7.46)protons of phenyl ring .
[19]	(4.09, 4.23) for (CO-CH=CH-CO) of eight –membered ring ., 9.34 of proton (NH-CO) of amide in diazoline cycle ., 2.88 protons of (N-CH_2-CO) ., (6.57-7.98) protons of phenyl ring .
[22]	3.24(1H ,S-CH-N)., (3.44-5.15) for (OH-OH-) of sugar ., (6.89-7.78) protons of phenyl ring .
[23]	6.54 protons of phenyl group ., 2.96 (N-CH-O) of cycle ., (3.0-4.48) protons for (-CH-OH) of sugar ., 4.87 for (SH) of thiadiazol ring .

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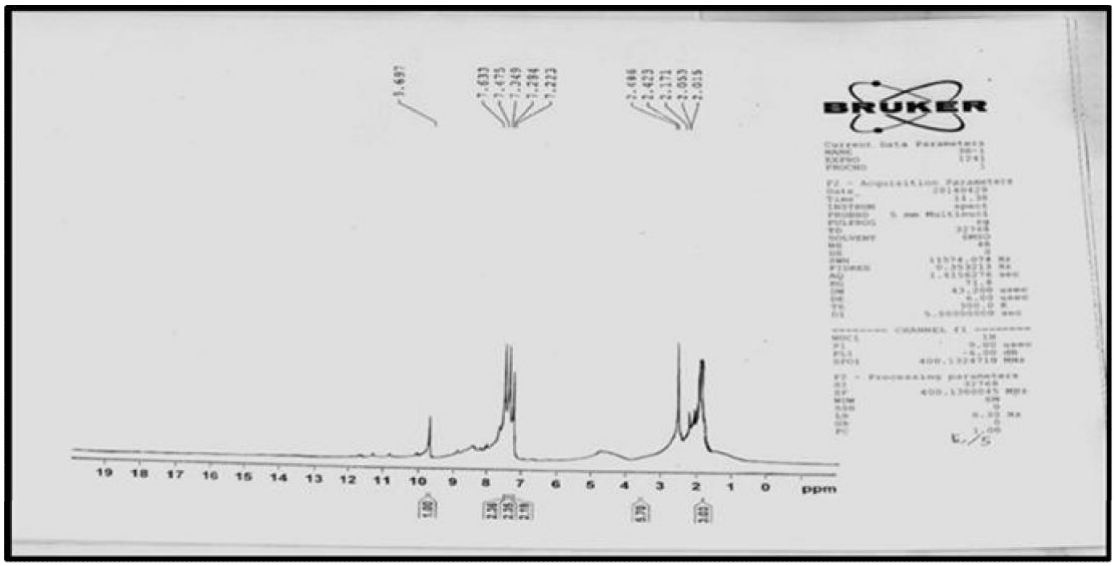

Fig (6) :H.NMR –Spectra of Compound [5]

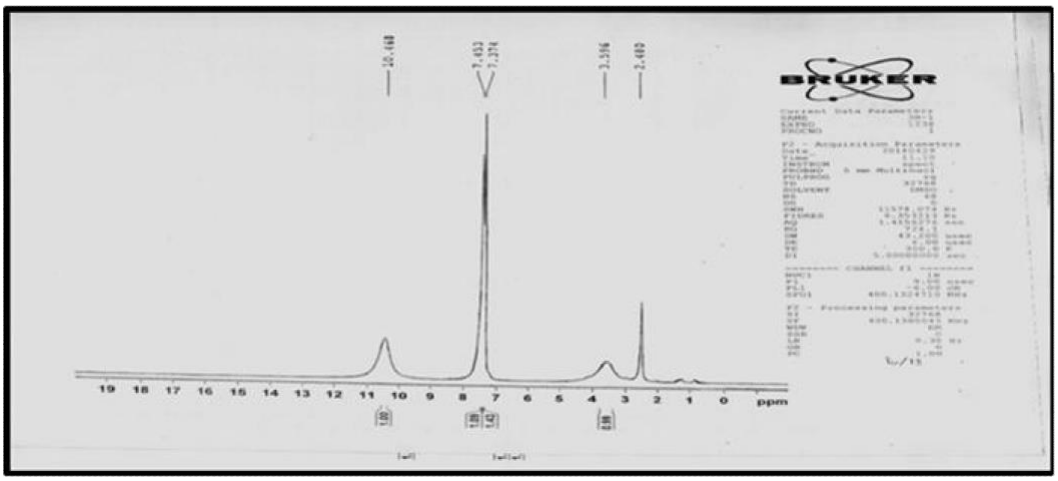

Fig (7) :H.NMR –Spectra of Compound [13]

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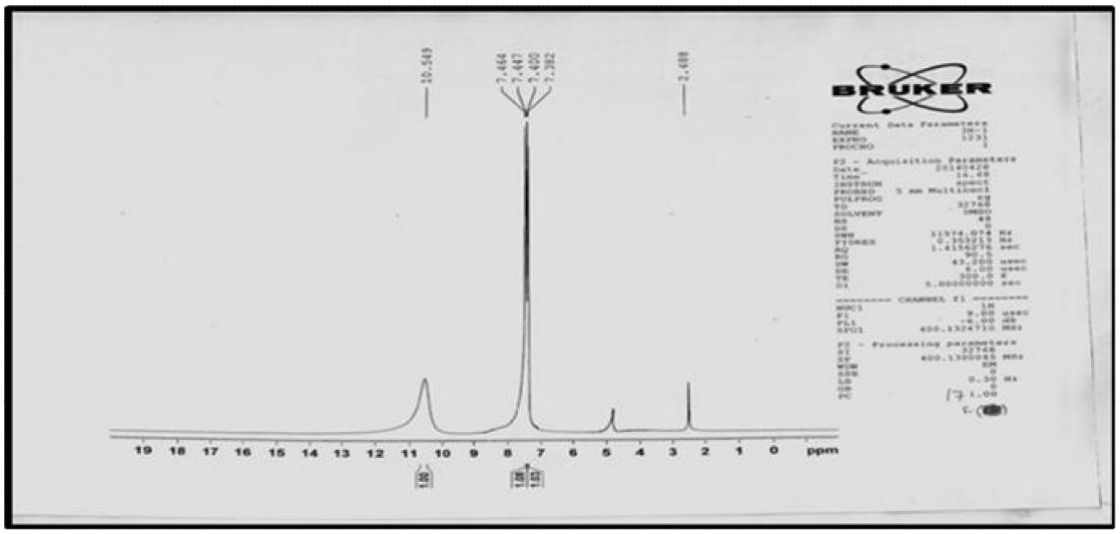

Fig (8) :H.NMR –Spectra of Compound [17]

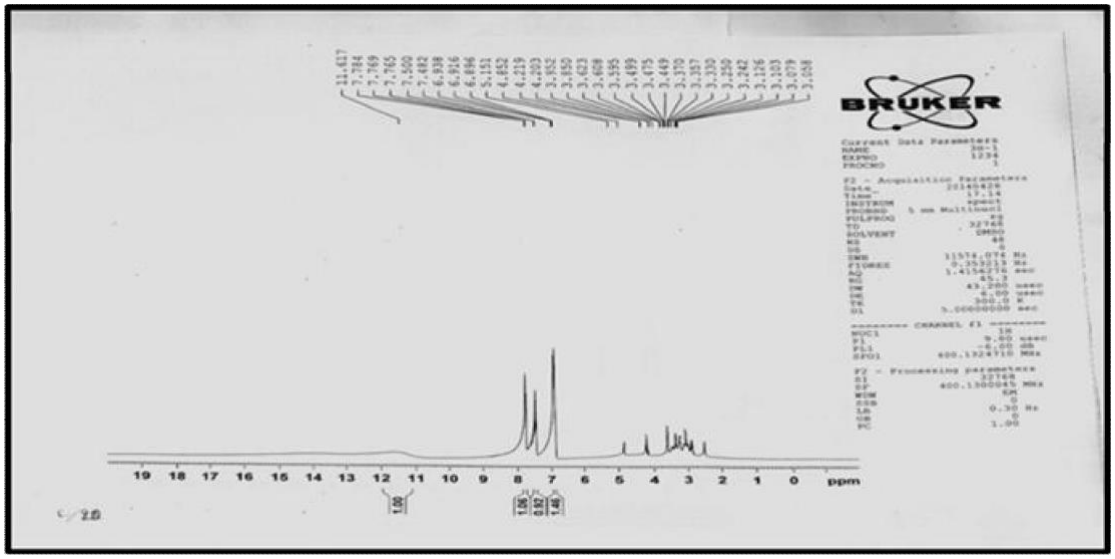

Fig (9) :H.NMR –Spectra of Compound [20]

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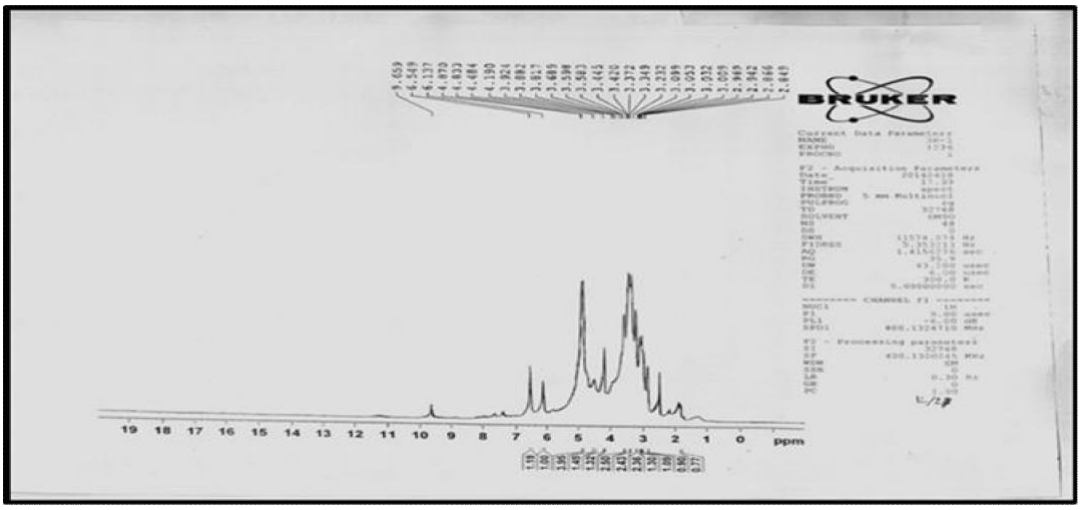

Fig (10) :H.NMR –Spectra of Compound [21]

Table (3) :physical properties and (C.H.N) analysis of compounds [1-23]

Comp. No.	M.F	M.P. (C°)	Name of compounds	Found / Calc.		
				C%	H%	N%
[1]	$C_2H_{11}N_5O$	205	2-amino-3-hydrazinyl propane hydrazide	26.955 27.067	8.094 8.270	52.414 52.631
[2]	$C_6H_{12}N_5OCl$	214	3-(diaziridin-1-yl)-2-(ethyl amino)-N((methy(amino) methyl)propane amide	34.893 35.045	5.608 5.840	34.011 34.071
[3]	$C_9H_5N_5O_7$	161	1,1-(2-(2,3-dioxoaziridin -1-yl)but-3-ene -1,3-diyl)bis (1,2-diazetidine-3,4-dione)	36.395 36.610	1.446 1.694	23.484 23.728
[4]	$C_9H_{17}N_5O$	190	2-(aziridin-1-yl)-1,3-di(1,2-diazetidin-1-yl)propan-1-one	51.021 51.184	7.9688. 056	33.024 33.175
[5]	$C_{27}H_{17}N_5O_7$	252	2,3-dihydrophalazine-1,4-dione compound with 2-(2-(1,3-dioxoisoindolin-2-yl)-3-oxopropyl)-2,3-dihydro phthalazine-1,4-dione	61.674 61.950	3.108 3.250	13.159 13.384
[6]	$C_8H_8N_2S_4$	200	1,2-phenylene di carbam o dithioic acid	36.616 36.889	3.001 3.074	10.505 10.759
[7]	$C_{10}H_8N_2S_4$	192	3,3-(1,2-phenylene)bis(1,3-thiazetidine-2-thione)	42.057 42.217	2.655 2.814	9.529 9.850
[8]	$C_{16}H_8N_2O_4S_4$	228	3,3-(1,2-phenylene)-bis(2-thioxo-2,3-dihydro-1,3-thiazepine-4,7-dione .	45.34 45.70	1.801 1.921	6.311 6.660
[9]	$C_{12}H_4N_2O_4S_4$	216	3-(2-(4-methyene-5-oxo-2-thioxo thiazolidin -3-yl)phenyl)-2-thioxo thiazolidine-4,5-dione	39.009 39.104	1.006 1.086	7.347 7.603
[10]	$C_{10}H_7O_4N$	196	2-(1,3-dioxo isoindolin-2-yl)acetic acid	58.273 58.536	3.125 3.414	6.508 6.829
[11]	$C_{10}H_7O_2N_3$	202	2-((1H-diazirin-3-yl)methyl)isoindolin-1,3-dione	59.369 59.701	3.317 3.482	20.537 20.895

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[12]	$C_{16}H_{11}O_2N_3$	244	2-((1H-benzo[d]imidazole-2-yl)methyl)isoindoline-1,3-dione	69.064 69.314	3.635 3.971	15.029 15.162
[13]	$C_{16}H_{13}O_3N_3$	216	N-(2-amino phenyl)-2-(1,3-dioxo isoindolin-2-yl)act amide	64.918 65.084	4.225 4.406	14.106 14.237
[14]	$C_{20}H_{13}O_5N_3$	228	(Z)-1-(2-(1,3-dioxo isoindolin-2- yl)acetyl) Benzo[b][1,4]diazocine-2,5 (1H,6H)-dione	63.893 64	3.246 3.466	11.006 11.2
[15]	$C_2H_3N_3S_2$	277	5-amino-1,3,4-thiadiazole-2-thiol	17.935 18.028	2.033 2.253	31.294 31.550
*[16]	$C_8H_7ON_5S_2$	295	3- amino-4-((5-mercapto-1,3, 4- thiadiazol-2-yl)di azenyl)phenol	37.651 37.93	2.426 2.790	27.399 27.650
[17]	$C_8H_5ON_5S_2$	289	2-(5-mercap to-1,3,4-thiadiazol-2- yl)-2H-benzo [d][1,2,3]triazole-5-01	38.031 38.228	1.776 1.991	27.569 27.875
[18]	$C_7H_{11}O_4S_2N_3$	152	(E)-5-(5-mercap to-1,3,4-thiadiazol-2-yl amino)pent ane-1,2,3,4-tetraol	31.396 31.683	4.057 4.149	15.617 15.841
[19]	$C_7H_{11}O_4N_3S_2$	148	5-(5-mercapto-1,3,4-thiadiazol-2-yl amino) pentane-1,2,3,4-tetraol	31.518 31.683	4.075 4.149	15.588 15.841
[20]	$C_7H_{11}O_4N_3S_2$	142	5-(5-mercapto-1,3,4-thiadiazol-2-yl imino) pentane-1,2,3,4–tetra ol.	31.352 31.683	4.023 4.149	15.544 15.841
[21]	$C_{14}H_{15}O_6N_3S_2$	164	3-(5-mercapto-1,3,4-thiadia zol-2-yl)-2-(1,2,3,4-tetra hydroxyl butyl)-2H-benzo [e][1,3]oxazin-4(3H)-one	43.463 43.622	3.784 3.894	10.656 10.905
[22]	$C_{14}H_{15}O_5N_3S_3$	169	3-(5-mercapto-1,3,4-thiadi azol-2-yl)-2-(1,2,3,4-tetra hydro xy butyl)-2H-benzo [e][1,3]thiazin-4(3H)-one	41.537 41.876	3.551 3.738	10.194 10.469
[23]	$C_9H_{14}O_5N_4S_2$	158	3-(5-mercapto-1,3,4-thiadiazol-2-yl)-2-(1,2,3,4-tetrahydroxy butyl)-imidazolidin-4-one.	33.27 33.53	4.117 4.380	17.096 17.38

Biological Activates:

Antibacterial activity : the test organisms used was a cine to bacteria as gram negative(-) bacteria and staphylococuse as (+) hole diffusion method [(25)] was used to measure the inhibitory activity as indicated by the diameter of the inhibition zone .concentration of ($1x10^{-2}$M) of test compounds were prepared by dissolving the compounds in dimethyl sulfoxide (DMSO) , (0.2ml) of synthesized compounds was added to each hole . the plates were allowed to stand at room temperature for two hours and then incubated .the organism were grown in nutrient agar at (37C□) for (24hr) .after incubation period ,the growth inhibition zones diameters were carefully measured in (mm) .the clear zone around the wells measured as inhibition zones .the absence of a clear zone around the well was taken

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in activity . From this resuls,,the compounds [5-9] have higher biological activity due to presence (sulfur and nitrogen) atoms in their structures.

Table [4] :Antibacterial Activity of some compounds

Comp. No.	Zon inhibition (mm)	
	Acine to bacteria(-)	*Staphyllocuse areus* (+)
[4]	20	22
[5]	30	35
[6]	27	34
[7]	25	30
[8]	33	39
[9]	24	30
[14]	15	17
[17]	20	24
[18]	22	28
[23]	22	27

REFERENCES:

1. Clayden ,Greeves ,Warren and Wothers ,"Organic Chemistry ", 1th Ed .,New York ,Oxford University ,**2001** .
2. Theophil Eicher and Siegfried Hanpt man ,"The Chemistry of Hetero cycles ",2th Ed., Wiley ,VCH ., **2003**
3. J. A. Joule and K. Mills ,"Hetero Cyclic Chemistry " 5th Ed ., Wiley & Sons LTD ,U.K ,**2010** .
4. Louis D .Quin and John A. Tyrell, "Fundamentals of Hetero Cyclic Chemistry" ,9th Ed., Wiley , New York ,**2010** .
5. Paula Yurkanis Bruice ,"Organic Chemistry " 6th Ed., United. State ,p., 34,**2011**
6. Issan Ahmed M. and Asniza Mustapha , Molecules , 15,P. 7498-7508, **2010.**
7. Pradnya R. Gadpayle , Sanjay P. Wate ,Ashok P Mehere , Kishor P. Bhusari and Nitin B. Charbe, Medicinal Chemistry & Drug Discovery ,3(1) ,P. 11-19 **,2012.**
8. Valery M. Dembitsky ,Alexander O. Terenter ,Dmitrio .Levitsky , Natural ,P. 977-1006 ,**2013 .**
9. J. Heman TAhire ,M.SC. Thesis School of Chemistry , University of East Anglia ,Norwich ,**2011**
10. Michael John B., Ph. D. Thesis , University of Warwick ,**2011** .
11. Arvind K. Singh ,Geeta M. and Kshitiz J., J. of Appl . Pharm. Sci., 1(5), P. 44-49,**2011** .
12. Tanveer A., Arvind K ., Nupur J. and Deepiska S., 905 Inte . Res. J. of Pharmacy , 3(3), P.70-82 , **2012** .
13. Yashshree P., Pramod K., Nitin K. and Ankita S., Int .J. of pharm.tech Res. ,3(2),P.2980-985,**2011**.
14. Rawalia ,Md ,.Headaitullah and Fa-Nazz , Kh . bal and HS .Lamba , Inte .J. of Res in Pharmacy and Chemistry imidazole., 1(3) ,P.565-574, **2011** .
15. Simone Bu., Mariola ko ., Agata Go., Zygmunt Ka., Henning Ei, Paololaco ., Gilles Go .and Frank Se ., ARKIVOC ,(iii) ,P. 225-250, **2009** .
16. Khairy A .M .El-Bayouki , "Organic Chemistry Thiazepime" J. Int. ,P. 1-71, **2013** .
17. A. Prasad ,D.Karunakar ,B. srinivas and B.prasanna , Int. J. of Chem. Tech Research ,5(4) ,P.1902- 1905 ,**2013** .
18. Raja Abed Al ameer Gafel ., A.J. Res Chem. ,7(1) ,P. 84-91, **2014** .
19. Nagham M.Aljamali ,research J. Science and Tech ., 6(1) ,P. 42-52, **2014** .

ISSN- 2394-5125 VOL 7, ISSUE 04, 2020

20. Fathy A. Yassin and F.Seleim , Derpharma chemical ,5(3) ,P.1-7,**2013** .
21. Gomathlvell Alswmy and Selvameena Ramaswamy , Inte .J. of Pharmacy and Pharmaceutical Sci ,6,1, P. 487-491 ,**2014**
22. Shakir mahmood Alwan ,molecules ,,17, P. 1025-1038 ,**2012** .
23. Amer J.Jarad , Eur, chem. Bull., 2(6) ,P. 383-388, **2013** .
24. Miad Hassan jebur , merit Research J. of Environmental Science and Toxicology , 2(1), P.1-8 ,**2014** .
25. Nagham M.Aljamali ., J. of Sci and Inno. Res , 2(5) ,P. 843-845 , **2013**.
26. Muna S. Al-Rawi , Huda A.Hassan ,Dheefaf F.Hassan and Rana M. Abdullah , Inte .J. for Sciences and Technology ., 8(2), P. 48-54, **2013** .