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Synthesis and Identification of of Some New Heterocyclic Compounds for Mesalazin Drug Derivatives with Evaluating of Their Biological Efficiency and Anti-oxidant Activity

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Abstract

In this research work new heterocyclic derivatives containing triazolidine have been prepared. The most available (mesalazine) has been used with benzaldehyde to get the starting material to prepare the alkyl triazolidine. All the synthesized compounds have been identified using FT-IR and ^{1}H-NMR spectrum. **(Scheme 1)** shows that, from simple and available material mesalazine with benzaldehyde in basic media compound (H1) containing Schiff base prepared. A ring closer reaction has been made to compound W using ethylene glycol and hydrazine to get (H2) compound. The nitrogen atom of compound (H2) also alkylated by chloroacetic acid to give (H4) compound then H4 compound reacted with thionyl chloride to get acetyl chloride (H5compound). Compound H5 treated with amino acid (glycine) to get (H6) compound. (H7) Compound has been synthesis by reacting (H6) compound with aromatic aldehyde in the presence of acetic anhydride to get Oxazole ring (H7 compound). Also, (H2) compound reacted with malic anhydride to prepare triazolidine diacetic acid derivative H3 compound. These synthesized compounds had also been assessed by (DPPH) method, the compounds (H1-H7) evaluated for their antimicrobial activity and antioxidant activity, the compounds have strong antioxidant activity comparable to that of the well known (ascorbic acid) (IC50=31.95 µg/mL) used.

Keywords:- triazolidine , glycine, chloroacetic acid, Oxazole, antioxidant activity

1. Introduction

Mesalamine or mesalazine (5-ASA) (5-aminosalicylic acid) is an aminosalicylate . It is a first stripe of treatment for (UC) ulcerative colitis and important therapeutic agent for inflammation of colon, and it is clinical treatment used to treat inflammatory bowel diseases such as (Crohn's disease). 5-ASA therapeutic agent is predictable to improve symptoms in (2-4) weeks of initiation. 5-aminosalicylic acid is the effective component of sulphasalazine that composed of a sulphapyridine moiety the carrier molecule, and mesalazine (5-ASA). It is either an adjunct treatment in severe cases or as mono-treatment in mild -moderate disease activity[1– 4] . Inflammation of bowel disease such as (UC) ulcerative colitis has been based on amino salicylates including mesalazine. Colonic diverticulosis disease is the most prevalent in ages ranging 50 - 59 and this percentage approximately 30%. This percentage increases for people older than 80 years and their percentage is about 70% [5] .Mesalazine controlled inflammation through inhibition of (COX) cyclooxygenase by diminishing of prostaglandin product in the colon. Recent studies investigate the natural compounds with less intense side effects for the medicament. 5-ASA also used symptomatic treatments, inclusive fluid infusion antidiarrheal as well as an antioxidant that detain free radicals .The therapeutic efficacy of mesalazine is significantly limited by low dissolution rate and poor solubility in water .In orally administered only (20%–30%) of 5-ASA absorbed[6–8].Oxazole is aromatic heterocyclic five-membered compounds and it is contain in their composition the oxygen atom and the nitrogen atom [9].In 1876, the chemistry of oxazole began when preparing the 2-methyloxazole compound, while in 1962 the parent oxazole was synthesized [10].Triazole is organic compounds containing in their structure a five-membered diunsaturated ring consisting of three nitrogen atoms and two carbon atoms at

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not contiguos positions,and has pair of isomeric are:1,2,4-Triazole and1,2,3-Triazole with molecular formulaC2H3N3 [11].

2.Experimental

Chemicals : Sigma Fluka, MERCK, BDH and CDH developed all of the chemicals used:

3.Instrumentation

The melting points of the compounds prepared were determined using the SMP30 melting point instrument, although the degrees of melting were not corrected. The "Testseon Shimadzu (FT- IR 8400Series Japan)" using the KBr disk method (T L C) was once performed for TLC on silk gel G and spots were visualized by I_2 vapors. The H1- NMR spectra had been obtained using DMSO as solvent and TMS as an internal standard with "Bruker, Ultra Shield 400 MHZ Switzerland."

4.Synthetic methods

Synthesis (E)-5-(benzylideneamino)-2-hydroxy benzoic acid (H1) [12]

In 50ml round bottom flask(0.01mol,1.06gm) of benzaldhyde mixed with (0,01mol,0.75gm) of Mesalazine and (0.01mol, 0.4gm) of sodium hydroxide then 20 ml of absolute ethanol was added to mixture after that the mixture was reflexed for 4h then the mixture was filtered, and the precipitate collected. The reaction was followed by TLC technique,the precipitate recrystallized from (absolute ethanol). Physical properties are shown below in Table 1.1.

Synthesis of 5,5'-(4-amino-3,5-diphenyl-1,2,4-triazolidine-1,2-diyl)bis(2-hydroxybenzoic acid) (H2)[13]

(0.01mol, 1.63 gm) of the compound (H1) have been mixed with 1ml (80%) hydrazine hydrate with (10 ml) of ethylene glycol. The mixture reflexed for 10h, then 10ml from hydrochloric acid conc was added and reflex the mixture for 4h,then poured to 200ml of water and formation yellow crystal. The reaction was keep track of by TLC technique, cooled until the precipitation was formed. It was recrystallized from the appropriate solvent (absolute ethyl alcohol). Physical properties are shown below in Table 1.1.

Synthesis of 5,5'-(4-(2,5-dioxo-2,5-dihydro-1H-pyrrol-1-yl)-3,5-diphenyl-1,2,4-triazolidine-1,2-diyl)bis(2-hydroxybenzoic acid) (H3)[14]

(0.01mol,3.56gm) of H2 was fused with (0.01mol,0.98gm) of malic anhydride for 30 minute in oil bath after cooled ethanol was added with stirring. The reaction was followed by TLC technique and the product was collected. absolute ethyl alcohol was used to recrystallized the precipitate. Physical properties are shown below in Table 1.1.

Synthesis of 5,5'-(4-((carboxymethyl)amino)-3,5-diphenyl-1,2,4-triazolidine-1,2-diyl) bis(2-hydroxybenzoic acid) (H4)[15]

Dissolved in round bottom flask (0.01mol,0.94gm) from chloro acetic acid in EtOH Absolute, glacial CH_3COOH, MeOH, HCl, aryl benzaldehyde, resorcinol, NaOH and H2SO4.

30ml chloroform and 4ml pyridine and equivalent amount of H2 (0.01mol,3.56gm) was added to mixture and the mixture reflexed for 30h and cooled the mixture viscous and washed it and raptly recrystallization from ethanol .TLC technique of the reaction was followed.The precipitate recrystallized by ,absolute ethyl alcohol. Physical properties are shown below in Table 1.1.

Synthesis of 5,5'-(4-((2-chloro-2-oxoethyl) amino)-3,5-diphenyl-1,2,4-triazolidine-1,2-diyl)bis(2-hydroxybenzoyl chloride) (H5)[16]

In 50ml round bottom flask attached with a reflux condenser, dissolved (0.01mol,4.14gm) of compound (H4) by 50ml of thionyl chloride and the mixture refluxed for 3h then solution concentrated by rotary and collected the oil product. Physical properties are shown below in Table 1.1.

Synthesis of 2,2'-((3,3'-(4-((2-((carboxymethyl)amino)-2-oxoethyl) amino)-3,5-diphenyl-1,2,4 triazolidine -1,2-diyl)bis(6-hydroxybenzoyl))bis(azanediyl))diacetic acid (H6)[17]

Compounds (H5), (0.01mol, 4.69gm,) dissolved in (5ml) of dioxane then added it to a stirring solution of glycine (0.03mol, 2.25gm) and sodium hydroxide(10%) (60ml).the mixture was stirring overnight and alittle amounts of powder ice were added. After that, the mixture was acidified with conc. HCl and the collected solution was concentrated under rotary evaporator device and the reaction was monitored by TLC technique, the residual precipitate dissolved in ethanol. Physical properties are shown below in Table 1.1.

Synthesis of (E)-2,2'-((4-(((4-((E)-4-chlorobenzylidene)-5-oxo-4,5-dihydrooxazol-2-yl) methyl)amino)-3,5-diphenyl-1,2,4-triazolidine-1,2-diyl)bis(6-hydroxy-3,1-phenylene))bis(4-((E)-4-chlorobenzylidene) oxazol-5(4H)-one) (H7)[18]

(4-Chlorobenzylidene) (0.03mol, 3.70gm) was added to mixture of compounds (H6) (0.01mol,5.82gm) and acetic acid (30 ml) and acetic anhydride (120 ml) and the mixture was

refluxed for seven hours, then the mixture was added into powder ice and stirred for half hour. The reaction was followed by TLC technique and the product was collected. The precipitate was recrystallized from absolute ethyl alcohol. Physical properties are shown below in Table 1.1.

Table1: Some of physical properties of compounds (H1-H7).

Com.	Mol.Formula	M.Wt	Color	m.p. ^oC	Yield%	Rf	(TLC)
H1	$C_{14}H_{11}NO_3$	241	Yellow	186-188	63	0.69	n-hexane: acetone 1:1
H2	$C_{28}H_{24}N_4O_6$	512	Dark brown	137-140	93	0.77	n-hexane:DCM 1:1
H3	$C_{32}H_{24}N_4O_8$	592	Reddish-brown	Oily	64	-	-
H4	$C_{30}H_{30}N_4O_8$	572	White	166-167	69	0.68	Acetone :n-hexane 1:2
H5	$C_{30}H_{23}Cl_3N_4O_5$	622	Dark brown	192-194	54	0.7	Acetone :n-hexane 1:2
H6	$C_{36}H_{35}N_7O_{11}$	741	Black	162-163	64	0.62	Benzene: Ethyl acetate 3:1
H7	$C_{57}H_{38}Cl_3N_7O_8$	1055	Dark orange	178 -179	86	0.76	n-hexane:DCM 1: 1

5. Results and Discussion

In this study, new heterocyclic derivatives of triazolidine from simple and available (Mesalazin with benzaldehyde) starting materials to get heterogeneous ring compounds containing rings such as oxazole and trizole derivatives of vital importance to their similarity. Studying the applications of these derivatives were carried synthesized from . In addition, the study examined the effect and efficacy of biologic anti-two types of Gram negative bacteria (*Escherichia coli*) and positive Gram (***Staphylococcus aureus***) and antifungal (***Aspergillus Niger***) and antioxidant activity.

Synthesis and identification of compound (H1)

(H1) compound was prepared through the reaction of benzaldehyde with Mesalazin, which is considered as a preliminary useful in the preparation of other derivatives and the presence of sodium hydroxide as a baseline(scheme 1).

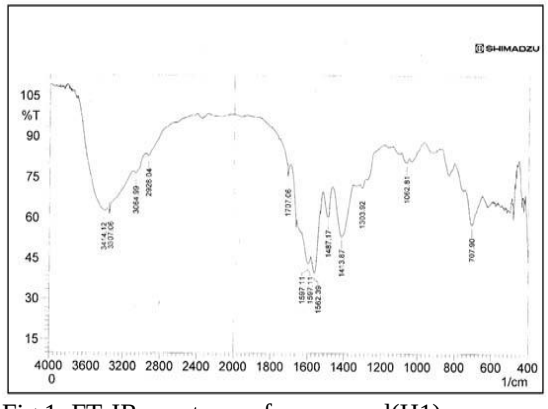


Fig.1: FT-IR spectrum of compound(H1) .

Synthesis and diagnosis of compound (H2)

The H2 compound was prepared by cyclic reactions between W compound (Schiff base) with hydrazine hydrate , ethylene glycol and presence of hydrochloric acid (Scheme 1)

The spectral data (FT-IR, ^{1}H-NMR[18,19] of compound (H1). Figure(1) showed the appearance of the absorption pack due to the vibration frequency of the OH carboxylic group (3414cm^{-1}-2400cm^{-1}) and absorption peak at (3064cm-^{1}) for the aromatic CH band, and absorption peak at(2928)for C-H aliphatic, while (CH=N) peak appeared at (1597.11cm^{-1}). The absorption band of the C=C group at (1562cm^{-1}) and also the appearance of a peak at (1390cm^{-1}) back to the C-N and the absorption peak at 1707 cm^{-1} due to(C=O carboxylic), but the absorption peak at 1413cm^{-1} bake to(C-H bend) and the absorption peak at (1062cm^{-1}-1303cm^{-1}) due to C-O group**.**

^{1}H-NMR spectra in Figure (2) showed singlet signal at 4.48ppm of tow protons (C***H***$_2$COOH), and doublet signal at 7.16ppm-7.92 ppm for five protons of aromatic region, singlet signal at 8.18ppm of proton CH=N) group and singlet signal at 11.02ppm of proton hydroxyl carboxylic group.

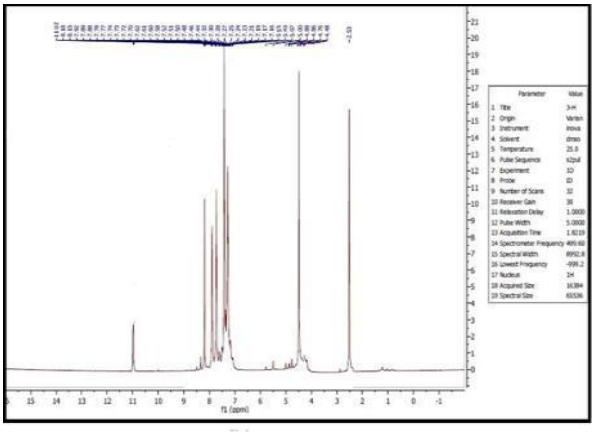


Fig.2: ^{1}H-NMR spectrum of compound(H1) .

The chemical structures of (H2) were detected through (FT-IR, ^{1}H-NMR) spectrum. The IR spectrum showed the figure (3). The appearance of absorption pack of NH_2 group (3427cm^{-1}-3406cm^{-1}), as well as appearance of the absorption band of OH carboxylic group at

(3443 cm^{-1}-2400cm^{-1}) .The appearance of absorption peak at (3051cm^{-1}) of the aromatic CH band, while absorption peak at (2947cm^{-1}) of the aliphatic CH band.Also the appearance of a peak at (1390cm^{-1}) back to the C-N group and the absorption peak at 1705cm^{-1}(C=O carboxylic)and the absorption peak at (1622-1558cm^{-1} (C=Car),(1209cm^{-1} -1072cm^{-1} to (C-O**).**

^{1}H-NMR spectra in Figure (4) showed disappearance singlet signal at 8.18ppm of (C***H***=N) group and appearance singlet signal at 2.11ppm of two proton of N***H***$_2$ group, and appearance singlet signal at 3.53ppm of four protons to C***H***$_2$COOH, and appearance singlet signal at 5.07ppm of two protons triazolidin ring and a doublet signal at 7.16ppm-7.92 ppm for ten protons of aromatic region and singlet signal at 11.11ppm due to two proton of hydroxyl carboxylic group .

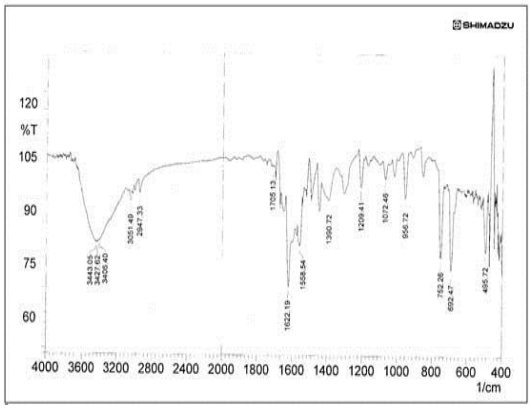


Fig.3: FT-IR spectrum of compound (H2) .

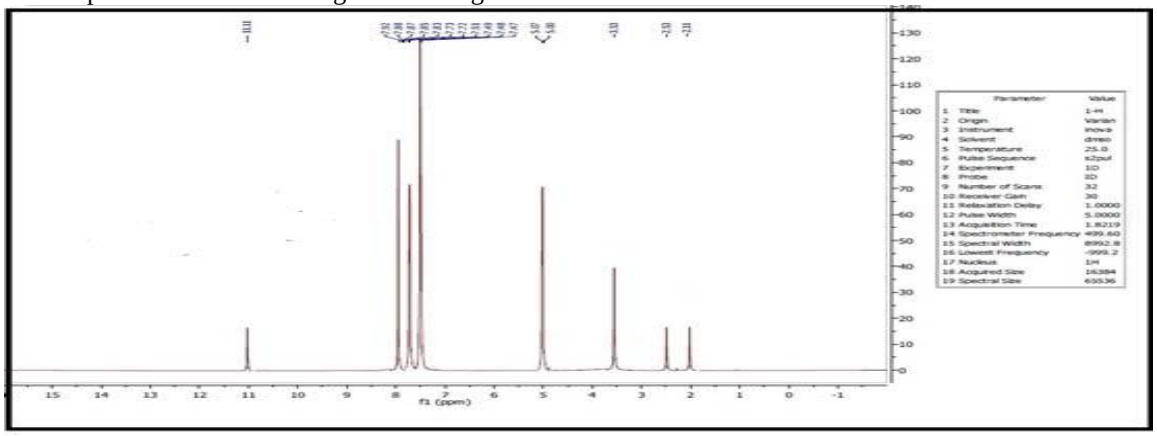


Fig.4: 1HNMR spectrum of compound (H2) .

Synthesis and identification of compound (H3)

compound (H3)was prepared through the reaction of (H2) with maleic anhydride, which is considered as a preliminary useful in the preparation of other derivatives (Scheme 1).

The spectral data FT-IRof compound (H3)in Figure (5) showed the appearance of the absorption peak due to the vibration frequency of the OH carboxylic group at (3429cm^{-1} -2400cm^{-1}) and absorption peak at (3032cm^{-1}-3062cm^{-1}) for the aromatic CH band, but absorption peak at (2974cm^{-1}-2893cm^{-1}) for C-Haliphatic. The absorption peak of the C=C group at (1573cm^{-1}-1604cm^{-1}) and also the appearance of a peak at (1450cm^{-1}) back to the C-N group; and the absorption peak at 1720cm^{-1} (C=Ocarboxylic), but the absorption peak at 1647cm^{-1} to (C=O amide) but the absorption peak at 1492cm^{-1} bake to (C-H bend) and the absorption peak at (1327cm^{-1} -1195cm^{-1})to(C-O)

^{1}H-NMR spectra in Figure (6) (H3) showed disappearance singlet at 2.11ppm because of two proton of N***H***$_2$ group, and appearance singlet signal at 3.51ppm of four protons attributed to C***H***$_2$COOH, and appearance singlet signal at 5.15ppm of two protons of triazolidin ring and doublet signal at 7.14ppm-7.91 ppm for ten protons of aromatic region and singlet a signal t 11.08ppm of two protons hydroxyl carboxylic group and doublet signal at6.99ppm of two protons of (C***H***=C***H***): ^{13}C-NMR spectra in (Figure 7) of H3 showed signal at 54.24ppm to (***C***H$_2$COOH), and appearance signal 97.24ppm to triazolidin ring, and signal at 128.81ppm-144.24ppm to (Car), 161.91ppm to(O=***C***-N)and signal at 171.81ppm to ***C***OOH group.

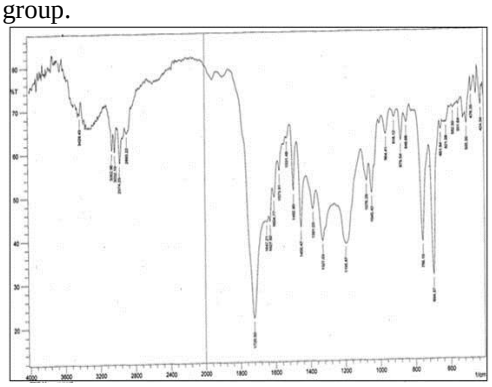


Fig.5: FT-IR spectrum of compound(H3) .

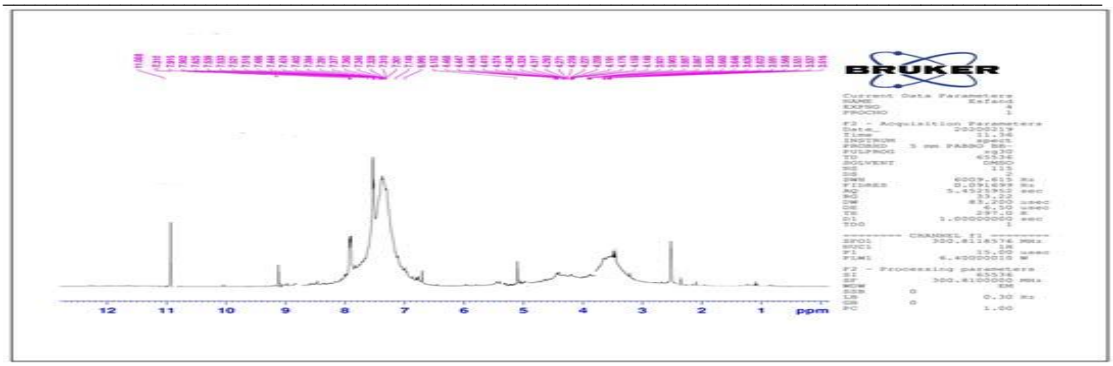


Fig.6: 1HNMR spectrum of compound(H3) .

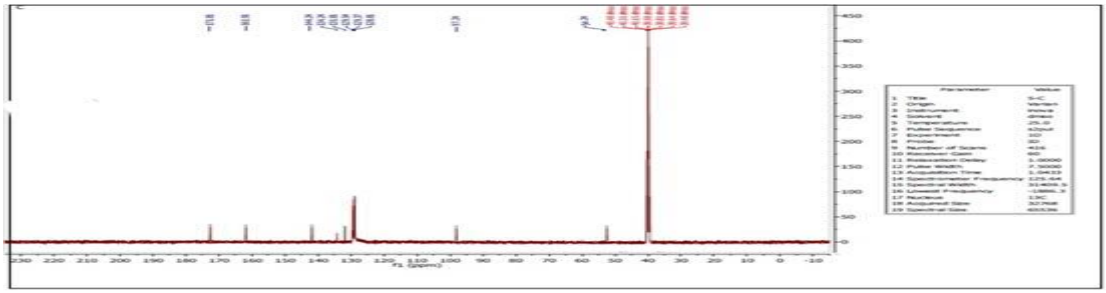


Fig.7: ^{13}CNMR spectrum of compound(H3)

Synthesis and diagnosis of compound (H4)

Compound H4 has been prepared by the alkylation of the nitrogen atoms of compound H3 through reaction with chloroacitic acid to obtain the carboxylic derivative and the presence of pyridine (scheme 1).

The IR spectrum in Figure (8) of H4 showed the absence of absorption band of NH_2 group (3427cm^{-1}-3406cm^{-1}) and the appearance of the pack at (3400cm^{-1}) back to NH group and the appearance of the peak of a new and broad absorbent band due to the stretch (OH) of the carboxylic group at (- 3404cm^{-1}-2400cm^{-1}). This indicates the formation of the W2 derivative and the appearance of an absorption peak returning to the carbonyl group of carboxylic acid at (1707cm^{-1}). , and the appearance of a absorption peak returning to the carbonyl group of amid (1654cm^{-1}) andC=C at (1595cm^{-1}-1572cm^{-1}). (CH_{alph}) at (2966cm^{-1}), (CHar) at (3039cm^{-1}). and also the appearance of a peak at (1350cm^{-1}) back to the C-N group.

^{1}H-NMR spectra in Figure (9) of H4 showed disappearance singlet signal at 2.11 ppm due to two protons of N***H***$_2$ group and appearance triplet signal at 2.07ppm because of proton N***H*** group and appearance singlet signal at 3.50 ppm because of four proton of (2C***H***$_2$COOH), and singlet signal at 5.45 ppm to two protons of triazolidin ring, and doublet signal at 3.52ppm to two proton of NH-C***H2*** and doublet signal at 6.83ppm-9.03ppm for ten protons of aromatic region and singlet signal at 10.52 because of three proton of hydroxyl carboxylic group (3O***H***)

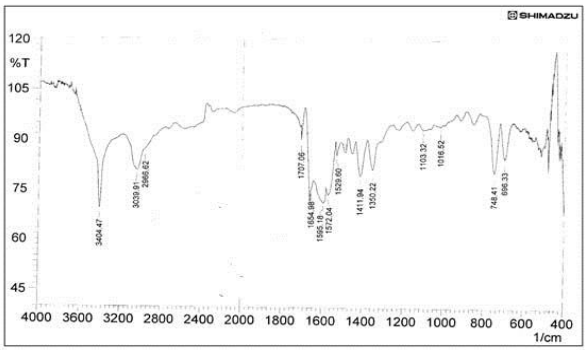


Fig.8: FT-IR spectrum of compound(H4) .

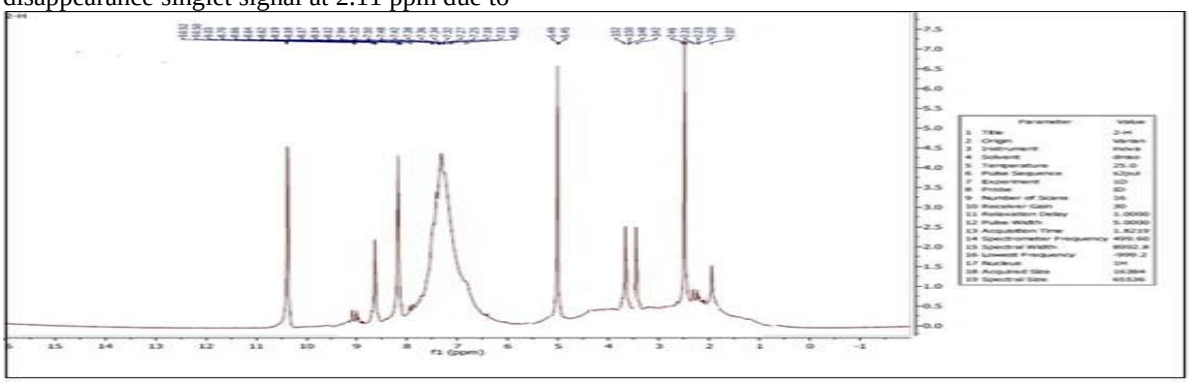


Fig.9: 1HNMR spectrum of compound(H4) .

Synthesis and diagnosis of compound (H5)

Compounds H5 have been prepared by reacting the compound (H4) with thionyl chloride produce acid chloride, HCl and SO_2 gase (Scheme 1).

The IR spectrum of the compounds (H5) shown in figures (10) The structures of compounds (H5) identification respectively by absence of the band of hydroxyl group at (3404.47cm-^{1}), and appear new sharp band at (1788) and (752 cm^{-1}) , refers to carbonyl group of acid chloride and chloride bond consecutively, Also, we can see the (C_{Har}) at (3084 cm-^{1}), (C_{Halph}) at (2941-2873cm^{-1}, C=C group at (1581cm^{-1}-1494cm^{-1}), (1446cm^{-1}-1573cm^{-1}), C-N at (1373cm^{-1}), at (1288cm^{-1}-1303 cm^{-1}C-O group .

Synthesis and diagnosis of compounds (H6)

Compounds H6 have been prepared through the reaction of acid chloride of compounds (H5) with the glycine amino acid in a basic medium through the nucleophilic reaction by the electron supply in the nitrogen atom in the acid glycine on the acid carbonyl chloride (Scheme 1) .

The IR spectrum of the compounds (H6) shown in figures (11) The structures of compounds (H6) respectively identified by appearance broad absorbent band of the stretch (OH) of the carboxylic group at (3433-2400cm^{-1}).And the appearance stretching band at (3219cm^{-1},) related to NH group. Appearance absorption band of the carbonyl group appeared at (1707cm^{-1},) and (1624cm^{-1},) was a good indication for the formation of amides carbony , (C=C) at (1534cm^{-1}, 1573cm-^{1}), (CH $_{alph}$) at (2924-2856 cm^{-1}, 2947 cm^{-1}), (CH ar) at (3059 cm^{-1}, ,(1323cm^{-1},)to (C-N), (1251cm^{-1}-1082cm^{-1})to(C-O).

^{1}H-NMR spectra in Figures (12) of (H6) showed appearance doublet signal at (4.65ppm) due to six protons in (H6) , of (HN-C***H***$_2$COOH) and singlet signal at 2.05ppm to proton of (N-N***H***), and singlet signal at (3.65ppm,) attributed to four protons of (N-C***H2***-C=O), and singlet signal at 5.04ppm, to two proton of triazolidin ring and doublet signal at (7.34ppm-8.15 ppm,) for ten, 16 protons of aromatic region, and triplet signal at 8.73ppm, to three proton(O=C-N***H***-CH2), and singlet signal at 11.47ppm, to three proton to (O***H***) of hydroxyl carboxylic group, doublet signal at 3.65ppm to two proton of (NH-C***H***$_2$) in H6.

Synthesis and identification of compound (H7)

Compound H7 have been prepared by closing the ring through the reaction of the compound (H6) with aromatic aldehyde (4-chlorobenzaldehyde) in a combination of acetic acid and acetic anhydride to obtain oxazole derivatives (1.3-oxazole) (scheme 1).

The IR spectrum of compounds H7 showed in figures (13) disappearance of broad absorbent band of the stretch (OH) of the carboxylic group at (3433cm^{-1}-2400cm^{-1})of H6 and absorption band at (1525cm^{-1}, 1525.cm^{-1}) to(C=Car), absorption band at (2939cm^{-1}-2981cm^{-1},) to (CH_{alph}),and (CH_{ar}) at (3059cm^{-1}, 3059cm^{-1}),and appearance of absorption band at(1755-1735cm^{-1}) to carbonyl group of ester ,and (1670cm^{-1}) to C=N, (1593cm^{-1}) to C=C ,(1377cm^{-1}) to C-N and (1203cm^{-1}-1246cm^{-1},) to C-O and (821cm^{-1},) to C-Cl and 1558cm^{-1}-1489cm^{-1}) to C=C ar

^{1}H-NMR spectra in Figures (14) H7 showed appearance singlet and doublet signal at 2.75ppm, because of two proton of (C***H***$_2$-oxazol), and singlet signal at 5.08ppm, to two proton of triazolidin ring and doublet signal at 7.47ppm-7.63 ppm, for 28 protons of aromatic region, singlet signal at 7.65ppm, 7.90ppm to three proton(3C***H***=C), triplet and signal at 2.20ppm to proton (N***H***-CH$_2$) in H7

^{13}C-NMR spectra in Figures (15) H7 showed appearance signal at 52.79ppm to(***C***H$_2$-triazol), signal at 103.51ppm, (***C***H-triazolidine ring), signal at 113.51ppm, to (Ar***C***H=C), signal at 123.51ppm-135.21ppm,128.90ppm-135.82ppm, (Car), signal at 131.65ppm to (C oxaazol ring), signal at 169.07ppm, (C=O) , signal at 171.07ppm, to(O-C=N).

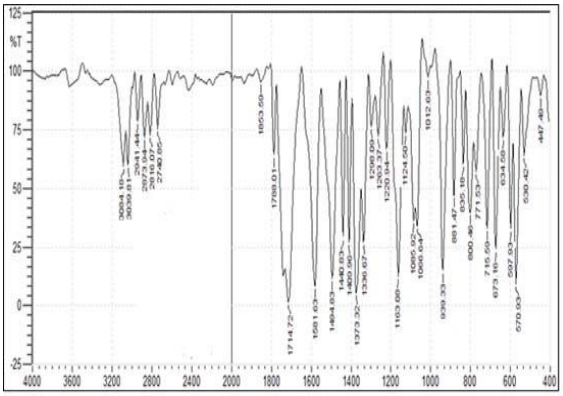


Fig.10: FT-IR spctrum of compound(H5) .

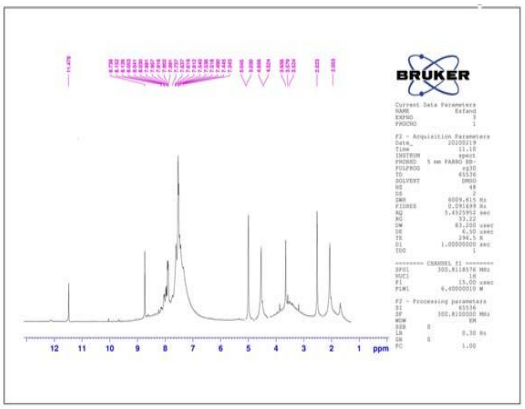


Fig.11: FT-IR spectrum of compound(H6) .

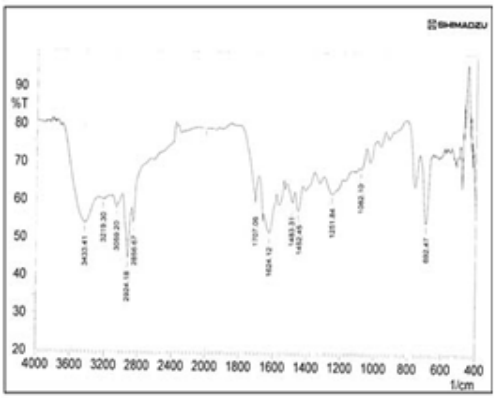


Fig.12: 1HNMR spectrum of compound(H6) .

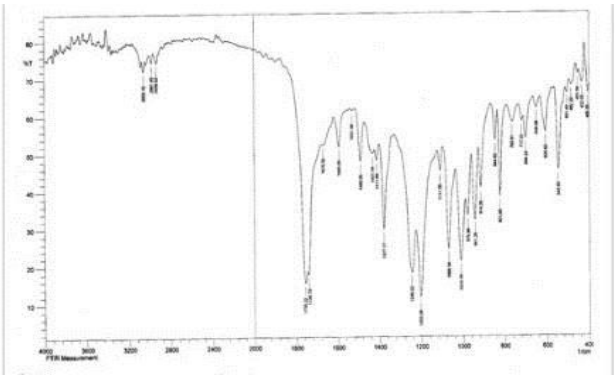
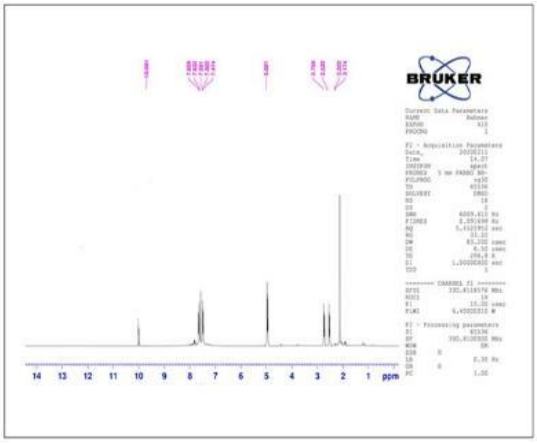


Fig.13: FT-IR spectrum of compound(H7) .



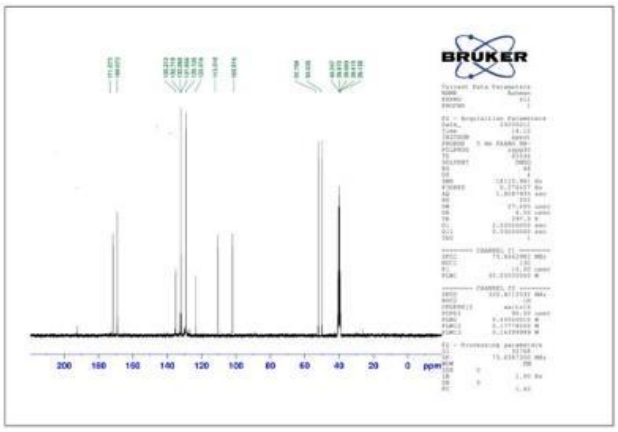
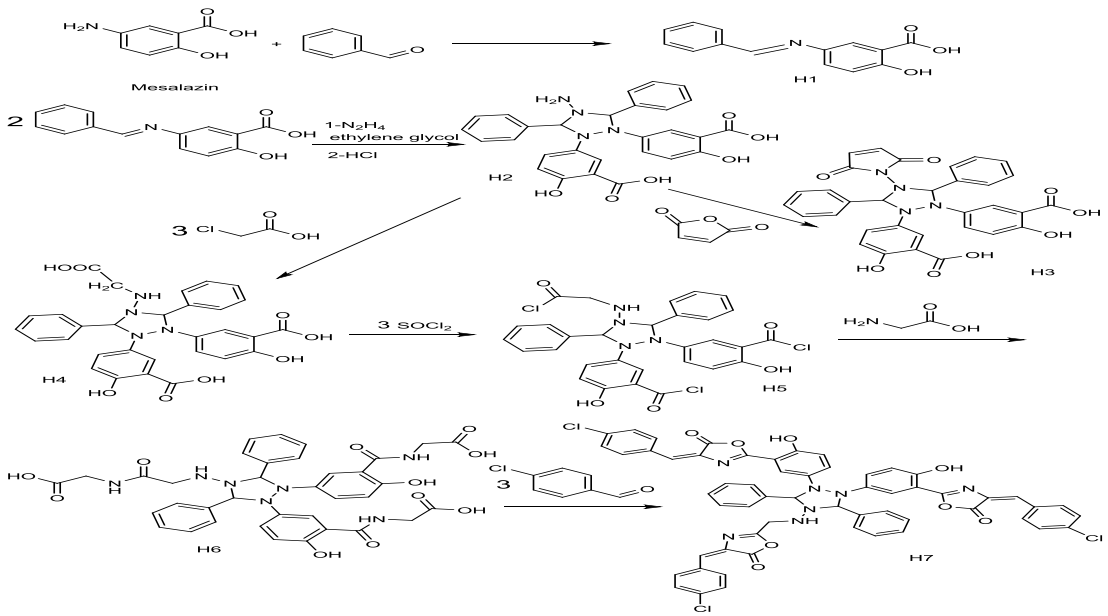


Fig.14: 1HNMR spectrum of compound(H7) . Fig.15: 13CNMR spectrum of compound(H7)



Scheme 2. Synthesis of Compounds (H1-H7).

6. Biological efficiency

The effect and efficacy of bacteriophageal antibodies against two types of bacteria, namely **(*Escherichia coli*)** and(**Staphylococcus aureus**), were studied. Some of these compounds showed an antagonistic effect, it was found that the derivatives (H1,H4,H5,H6,H7) has a high effectiveness in inhibiting the growth of negative bacteria type**(*Escherichia coli*)**. It was also found that the compound (H1,H2,H3,H5,H6,H7) have a high effectiveness in inhibiting bacteria (***Staphylococcus aureus***) and if compared to the biological effectiveness of **cefotaxime**. as shown in Table 2.

7. Ant-oxdant activity

Procedure: Compounds antiradical operation employed traditional DPPH [20].

DPPH (1.3mg / ml) was prepared as a normal solution in MeOH, 100µl DPPH was added in 3ml of MeOH and absorbance at 517 nm was noted. The various compound concentrations (25, 50, 75, 100 µg / ml) were prapared.1ml of the sample was diluted to 3 ml and 100 µl of DPPH was applied. Test tubes were placed in light for 30 minutes to complete the reaction. At 517 nm on the "UV-VIS spectrophotometer" to ward methonol as a blank, absorbance of each test tube was measured after 30min. From linear curve to obtained (IC50 value) by drawing between concentration and percent inhibition. figure: (16,17and18).

% scavenging = Abs. of control – Abs. for sample check X 100

Abs. of control

The antioxidant activity in table (3) indicates that the maximum of compounds displayed moderate to strong antioxidant activity in comparison to normal (ascorbic acid) activity (IC50=31.95 µg / mL). Compounds (H1-H7) with strong activity had the highest activity due to OH group . Generic drug ascorbic acid showed IC50=31.95 µM. Compared to the reference, the forces for the antioxidant function of the test compounds are in the following order: ascorbic acid >H3>H2>H5>H1>H7>H4>H6.

Table 2. Shows the inhibition of the growth of the bacteria (Inhibion Zone) by some derivatives recorded in millimeter unit

Comp. No.	***Escherichia coli***	***Staphylococcus aureus***
Cefotaxime (Antibiotic) Standard	**11**	**16**
H1	**15**	20
H2	**9**	25
H3	8	20
H4	14	15
H5	15	12
H6	**30**	25
H7	12	27

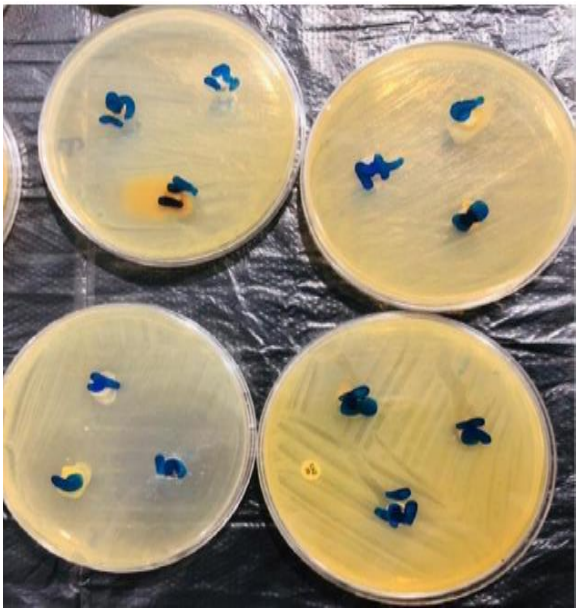


Figure (16) Biological Effect of compounds

Table 3.Observation for in-vitro antioxidant activity of synthesized compounds

conc. µg\ml	H1	H2	H3	H4	H5	H6	H7	STD (Ascorbic acid)
25	47.76	48.41	50.34	40.44	45.35	39.42	37.24	46.12
50	49.83	57.42	57.21	52.25	58.22	45.63	56.52	60.14
75	53.77	60.26	66.23	62.32	62.16	58.73	63.7	65.01
100	65.21	69.44	72.11	69.65	68.18	65.22	70.81	78.3
IC50 µg\ml	44.09	28.82	23.91	46.72	33.24	56.28	46.11	31.95

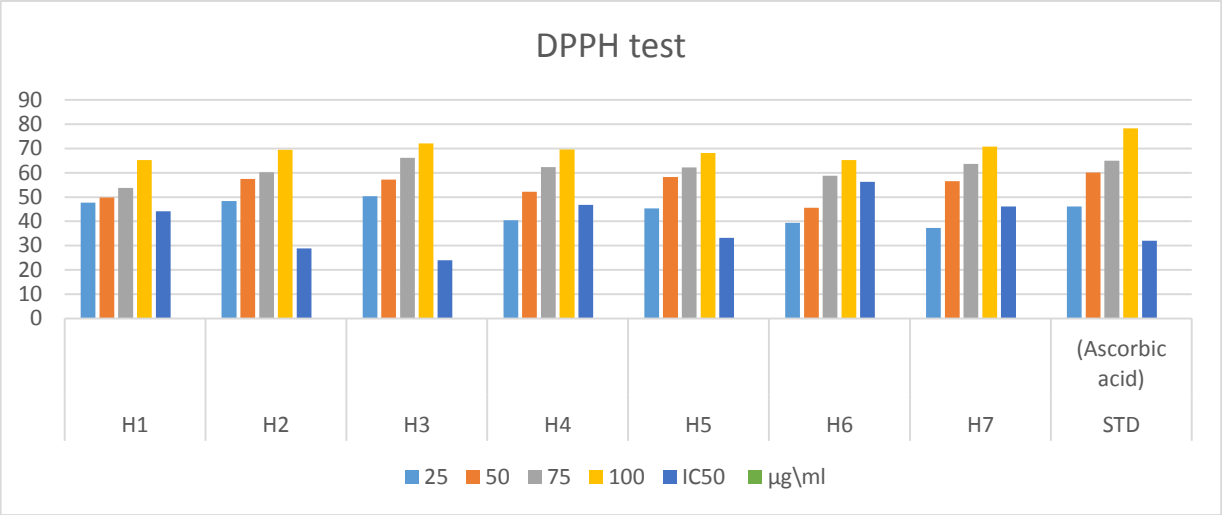


Figure 16: Graph showing DPPH scavenging activity of chalcones (H1-H7).

8. CONCLUSION:

In present study New derivatives prepared from the Mesalazin with benzaldehyde may be used to synthesis other derivatives as a result of having effective aggregates as well as the proportion of the productions were good and useful for continuation of subsequent step. From the antioxidant activity it has been interesting to note that the compounds were strong antioxidant activity and antibiotic.

9. Conflicts of Interest

There are no conflicts to declare.

10. Acknowledgments

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