Synthesis and Characterization of Some New Hydrazides and Their Derivatives

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Abstract

New hydrazide compounds (A_2) and (A_9) were prepared from their corresponding esters (A_1, A_8) .These esters were also prepared from their precursors 5-ethoxy carbonyl-(4-methoxyphenyl)-6-methyl-1,2,3,4-tetrahydropyrimidine-2-thione (A_1) via multicomponent reaction type and from hippuric acid respectively. The hydrazide compounds were then allowed to react with some aldehydes forming the corresponding hydrazones (A_{3-7}) and (A_{10-14}). The synthesized compounds were characterized by IR, ^{1}H-NMR, ^{13}C-NMR, and Mass spectroscopies and well discussed. .

Keywords: Ester, Hydrazide, Hydrazone, Schiff base

Introduction

Hydrazides are known to include an essential category of biologically active organic compounds [1-5]. These hydrazides and their condensation products were stated to possess a wide range of biological activities as well as antibacterial activity [1], tuberculostatic properties [2], HIV inhibitors [3], pesticidal [4], antifungal [5]. Some of the hydrazides and analogous hydrazones are psychopharmacological agent such as monoamine oxidase (MAO) inhibitor and serotonin antagonists [6].

Hydrazide-hydrazones compounds are not only intermediates but they are likewise very effective organic compounds in their own right. When they are used as intermediates, new derivatives can be synthesized by using the active hydrogen component of –CONHN=CH- azometine group [7-9].

A variety of methods have been used to prepare hydrazides, some of them involve the reaction of acids or their derivatives with hydrazine hydrate, anhydrides and acid chlorides, although the more popular method for the preparation of hydrazides achieved by the hydrazinolysis[10]. Hydrazone compounds as it was mentioned above due to their azo methane group activities have drawn the attention of many researchers in synthesizing numerous compounds of hydrazones by the well-known hydrazinolysis method.[11,12] .These hydrazones, likewise the corresponding hydrazides, found a variety of applications in health and medicine[13, 14].

Experimental

All reagents and chemicals were from BHD and Sigma-Aldrich companies and used without further purification. Melting points were determined with Electro thermal 9300 melting point apparatus. Infrared spectra were recorded on a Perkin-Elmer 1600 FTIR. ^{1}H-NMR, ^{13}C-NMR spectra were recorded at 250 or 400 MHz on a Bruker AV-1400 model or Bruker AV-1250 model NMR instrument by using DMSO-d_6 as a solvent. Accurate masses were obtained using a Water-Micromass LCT electrospray mass spectrometer. All the measurements were performed at the Chemistry Department, University of Sheffield, Sheffield, United Kingdom.

Synthesis of 5-ethoxycarbonyl-4-(methoxyphenyl)-6-methyl-1,2,3,4-tetra hydropyrimidine-2-thione (A_1) [15]:

A mixture of 4-methoxy benzaldehyde (1 mol.), ethyl acetoacetate (1 mol.), thiourea (1 mole), and some drops of sulfuric acid were heated at 90 ºC in a water bath. After completion, the mixture (monitored by TLC) was dissolved in ethanol and poured into cold water. The resulting precipitate was filtered and recrystallized from ethanol, Pale yellow solid, m.p: 148-150 ºC, yield 79%.

Synthesis of ethyl hippurate (A_8) [16]:

A solution of (0.1 mol.) hippuric acid or N-benzoyl glycine in (50 ml) of absolute ethanol saturated with hydrochloric acid (gas), the reaction mixture was refluxed in water bath for three hours at (90 ºC). After the completion of the reaction (monitored by TLC), the mixture was cooled and neutralized with sodium bicarbonate and the separated mass was filtered off. The product was recrystallized from ethanol and cooled, White solid, m.p: 58-60 ºC, yield 75%.

Synthesis of hydrazide compounds ((A_2), (A_9) General procedure)[17]:

A mixture of the ester (A_1) or (A_8) (0.05 mol.), and hydrazine hydrate (80%), (0.10 mol.) in ethanol (20 ml) were refluxed for 2 hours. Excess ethanol was evaporated under vacuum and the precipitate product was crystallized from ethanol.

Synthesis of hydrazone compounds ((A_{3-7}), (A_{10-14}) General procedure) [18]:

Equimolar quantities of hydrazide (A_2) or (A_9) and substituted bezaldehyde in (25 ml) of absolute ethanol were refluxed for three hours. The reaction mixture was then cooled and the solid precipitated was recrystallized from ethanol, physical and spectral data were illustrated in the following article:

Results

5-hydrazido-4-(methoxyphenyl)-6-methyl-1,2,3,4-tetrahydropyrimidine-2-thione (A_2)

Orange solid, mp: 114-116 ºC, Yield %: 85 %, IR spectrum, υ, cm^{-1}: 3175 (NH str.), 3103 (Ar-CH str.), 2992 (aliphatic-CH str.), 1660 (C=O str.), 1637 (C=S str.), 1607, 1457 (C=C str.), 1392 (CH bend). ^{1}H-NMR (DMSO-d_6), δ, ppm: 2.3 (3H, s, CH_3), 3.9 (3H, s, OCH_3), 4.5 (1H, s, CH), 5.6 (1H, s, NH), 6.0 (1H, s, NH), 7.4-7.9 (4H, m, Ar-CH), 8.7 (1H, s, NH), 12.0 (2H, s, NH_2). ^{13}C-NMR (DMSO-d_6), δ, ppm: 19.48, 55.77, 59.11, 113.08, 114.84, 124.87, 137.00, 155.60, 161.48, 165.55, 171.60. High resolution mass spectrum (EI): Found: m/z 293.20 $[M]^+$, Calculated 293.37.

4-nitrophenyl-(4-methoxyphenyl-6-methyl-2-thioxo-1,2,3,4-tetrahydropyrimidin-5-yl-5-carbo) hydrazone(A_3)

Yellow solid, mp: 276-278 ºC, Yield %: 87 %, IR spectrum, υ, cm^{-1}: 3308 (NH str.), 3112 (Ar-CH str.), 2939 (aliphatic-CH str.), 1666 (C=O str.), 1628 (C=N str.), 1593, 1408 (C=C str.), 1347 (N=O str.) 1380, (CH bend). ^{1}H-NMR (DMSO-d_6), δ, ppm: 2.4 (3H, s, CH_3), 3.9 (3H, s, OCH_3), 4.5 (1H, s, CH), 5.6 (1H, s, NH), 6.9-8.3 (8H, m, Ar-CH), 8.5 (1H, s, N=CH), 11.3 (1H, s, NH), 12.0 (1H, s, NH). ^{13}C-NMR (DMSO-d_6), δ, ppm: 22.30, 56.90, 63.27, 110.01, 114.65, 123.51, 123.98, 126.33, 133.80, 140.07, 143.26, 148.79, 155.80, 161.17, 165.45, 171.22. High resolution mass spectrum (EI): Found: m/z 426.50 $[M]^+$, Calculated 426.47.

4-dimethylaminophenyl-(4-methoxyphenyl-6-methyl-2-thioxo-1,2,3,4-tetrahydropyrimidin-5-yl-5-carbo) hydrazone (A_4)

Yellow solid, mp: 258-260 ºC, Yield %: 73 %, IR spectrum, υ, cm^{-1}: 3303 (NH str.), 3065 (Ar-CH str.), 2969 (aliphatic-CH str.), 1660 (C=O str.), 1598 (C=N str.), 1557, 1445 (C=C str.), 1368 (CH bend). ^{1}H-NMR (DMSO-d_6), δ, ppm: 2.3 (3H, s, CH_3), 3.0 (6H, s, $N(CH_3)_2$), 3.9 (3H, s, OCH_3), 4.5 (1H, s, CH), 5.9 (1H, s, NH), 7.2-8.1 (8H, m, Ar-CH), 8.4 (1H, s, N=CH), 11.5 (1H, s, NH), 12.2 (1H, s, NH). ^{13}C-NMR (DMSO-d_6), δ, ppm: 21.67, 44.99, 6012, 58.89, 108.36, 113.64, 118.68, 124.46, 126.41, 127.05, 141.78, 154.48, 155.51, 158.68, 167.33, 172.45. High resolution mass spectrum (EI): Found: m/z 424.44 $[M]^+$, Calculated 424.54.

4-chlorephenyl-(4-methoxyphenyl-6-methyl-2-thioxo-1,2,3,4-tetrahydropyrimidin-5-yl-5-carbo) hydrazone (A_5)

Brown solid, mp: 132-134 ºC, Yield %: 85 %, IR spectrum, υ, cm^{-1}: 3310-3164 (NH str.), 3102-3066 (Ar-CH str.), 2982 (aliphatic-CH str.), 1663 (C=O str.), 1601 (C=N str.), 1575, 1456 (C=C str.), 1393 (CH bend).^{1}H-NMR (DMSO-d_6), δ, ppm: 2.2 (3H, s, CH_3),4.0 (3H, s, OCH_3), 4.4 (1H, s, CH), 5.9 (1H, s, NH), 7.1-8.0 (8H, m, Ar-CH), 8.6 (1H, s, N=CH), 11.9 (1H, s, NH), 12.4 (1H, s, NH). ^{13}C-NMR (DMSO-d_6), δ, ppm: 23.31, 58.11, 63.54, 105.14, 113.17, 120.54, 123.37, 125.09, 131.15, 134.42, 142.99, 144.89, 156.01, 162.19, 165.45, 173.04. High resolution mass spectrum (EI): Found: m/z 415.80 $[M]^+$, Calculated 415.92.

4-hydroxyphenyl-(4-methoxyphenyl-6-methyl-2-thioxo-1,2,3,4-tetrahydropyrimidin-5-yl-5-carbo) hydrazone (A_6)

Pale Yellow solid, mp: 136-138 ºC, Yield %: 62 %, IR spectrum, υ, cm^{-1}: 3502 (OH str.) 3335 (NH str.), 3078 (Ar-CH str.), 2976 (aliphatic-CH str.), 1669 (C=O str.), 1611 (C=N str.), 1591, 1459 (C=C str.), 1387 (CH bend). ^{1}H-NMR (DMSO-d_6), δ, ppm: 2.2 (3H, s, CH_3),2.6 (1H, s, OH), 3.8 (3H, s, OCH_3), 4.8 (1H, s, CH), 5.7 (1H, s, NH), 6.9-8.3 (8H, m, Ar-CH), 8.9 (1H, s, N=CH), 11.3 (1H, s, NH), 12.0 (1H, s, NH). ^{13}C-NMR (DMSO-d_6), δ, ppm: 25.85, 62.78, 67.25, 106.09, 112.02. 122.28, 124.00, 128.2, 133.84, 135.98, 141.29, 145.02, 155.23, 163.91, 166.10, 172.34. High resolution mass spectrum (EI): Found: m/z 397.50 $[M]^+$, Calculated 397.47.

4-methoxyphenyl-(4-methoxyphenyl-6-methyl-2-thioxo-1,2,3,4-tetrahydropyrimidin-5-yl-5-carbo) hydrazone (A_7)

Pale Yellow solid, mp: 126-128 ºC, Yield %: 76 %, IR spectrum, υ, cm^{-1}: 3292 (NH str.), 3028 (Ar-CH str.), 2959 (aliphatic-CH str.), 1670 (C=O str.), 1613 (C=N str.), 1601, 1474 (C=C str.), 1381 (CH bend). ^{1}H-NMR (DMSO-d_6), δ, ppm: 2.4 (3H, s, CH3), 3.0 3.4 (6H, s, OCH_3), 4.9 (1H, s, CH), 5.4 (1H, s, NH), 7.0-8.5 (8H, m, Ar-CH), 9.0 (1H, s, N=CH), 11.6 (1H, s, NH), 12.4 (1H, s, NH). ^{13}C-NMR (DMSO-d_6), δ, ppm: 26.31, 51.87, 59.24, 68.59, 112.62, 115.18, 119.57, 122.84, 128.65, 133.84, 135.6, 143.29, 152.65, 154.12, 164.65, 166.65, 174.58. High resolution mass spectrum (EI): Found: m/z 411.60 $[M]^+$, Calculated 411.50.

Hippuric hydrazide (A_9)

White solid, mp: 154-156 ºC, Yield %: 70 %, IR spectrum, υ, cm^{-1}:3491-3299 (NH str.), 3061 (Ar-CH str.), 2938 (aliphatic-CH str.), 1638 (C=O str.), 1630 (C=O str.), 1603, 1489 (C=C str.), 1377 (CH bend. ^{1}H-NMR (DMSO-d_6), δ, ppm: 3.8 (2H, s, CH_2), 4.3 (2H, s, NH_2), 7.4-7.9 (5H, m, Ar-CH), 8.7 (1H, s, NH), 11.1 (1H, s, NH). ^{13}C-NMR (DMSO-d_6), δ, ppm: 41.84, 128.70, 128.78, 131.76, 134.47, 166.95, 168.83. High resolution mass spectrum (EI): Found: m/z 194.09 $[M]^+$, Calculated 194.09.

2-hydroxy-1-naphthyl hippuryl hydrazone (A_{10})

Yellow solid, mp: 263-268 ºC, Yield %: 70 %, IR spectrum, υ, cm^{-1}:3420 (OH str.), 3213 (NH str.), 3060 (Ar-CH str.), 2916 (aliphatic-CH str.), 1697 (C=O str.), 1637 (C=O str.), 1624 (C=N str.), 1595, 1481 (C=C str.), 1430 (C-H bend), 1367 (C-N str.). ^{1}H-NMR (DMSO-d_6), δ, ppm: 4.1 (2H, s, CH_2), 7.3-8.3 (11H, m, Ar-CH), 8.9 (1H, s, CH), 9.3 (1H, s, OH), 11.9 (1H, s, NH), 12.8 (1H, s, NH). High resolution mass spectrum (EI): Found: m/z 348.13 $[M]^+$, Calculated 348.14.

2-hydroxyphenyl hippuryl hydrazone (A_{11})

Red solid, mp: 254-256 ºC, Yield %: 73 %, IR spectrum, υ, cm^{-1}:3416 (OH str.), 3210 (NH str.), 3066 (Ar-CH str.), 2863 (aliphatic-CH str.), 1697 (C=O str.), 1628 (C=O str.), 1610 (C=N str.), 1562, 1442 (C=C str.), 1382 (C-H bend),1356 (C-N str.). High resolution mass spectrum (EI): Found: m/z 298.280 $[M]^+$, Calculated 298.281.

3-pyridiny hippuryl hydrazone (A_{12})

Brown solid, mp: 192.194 ºC, Yield %: 65 %, IR spectrum, υ, cm^{-1}:3309 (NH str.), 3074 (Ar-CH str.), 2962 (aliphatic-CH str.), 1682, 1629 (C=O str.), 1608 (C=N str.), 1576, 1415 (C=C str.), 1396 (C-H bend), 1352 (C-N str.). ^{1}H-NMR (DMSO-d_6), δ, ppm: 4.4 (2H, s, CH_2), 7.5-8.3 (8H, m, Ar-CH),8.6 (1H, s, CH), 8.8 (1H, s, NH), 11.8 (1H, s, NH).^{13}C-NMR (DMSO-d_6), δ, ppm:41.24, 124.42 124.72, 128.80, 130.50, 131.81, 133.8, 134.28, 134.53, 144.39, 148.92, 167.02, 170.98. High resolution mass spectrum (EI): Found: m/z 283.11 $[M]^+$, Calculated 283.11.

4-methoxyphenyl hippuryl hydrazone (A_{13})

Off white solid, mp: 168-170 ºC, Yield %: 67 %, IR spectrum, υ, cm^{-1}:3182 (NH str.), 3063 (Ar-CH str.), 2959 (aliphatic-CH str.), 1701, 1667 (C=O str.), 1614 (C=N str.), 1582, 1416 (C=C str.), 1392 (C-H bend), 1332 (C-N str.). ^{1}H-NMR (DMSO-d_6), δ, ppm: 5.6 (2H, s, CH), 7.3-8.3 (8H, m, Ar-CH), (1H, s, CH), 11.9 (1H, s, NH).^{13}C-NMR (DMSO-d_6), δ, ppm: 41.23, 56.15, 112.29, 121.22, 122.58, 125.80, 127.72, 128.79, 131.79, 134.57, 158.04, 158.14, 166.97, 170.68. High resolution mass spectrum (EI): Found: m/z 312.135 $[M]^+$, Calculated 312.134.

2,6-dichlorophenyl hippuryl hydrazone (A_{14})

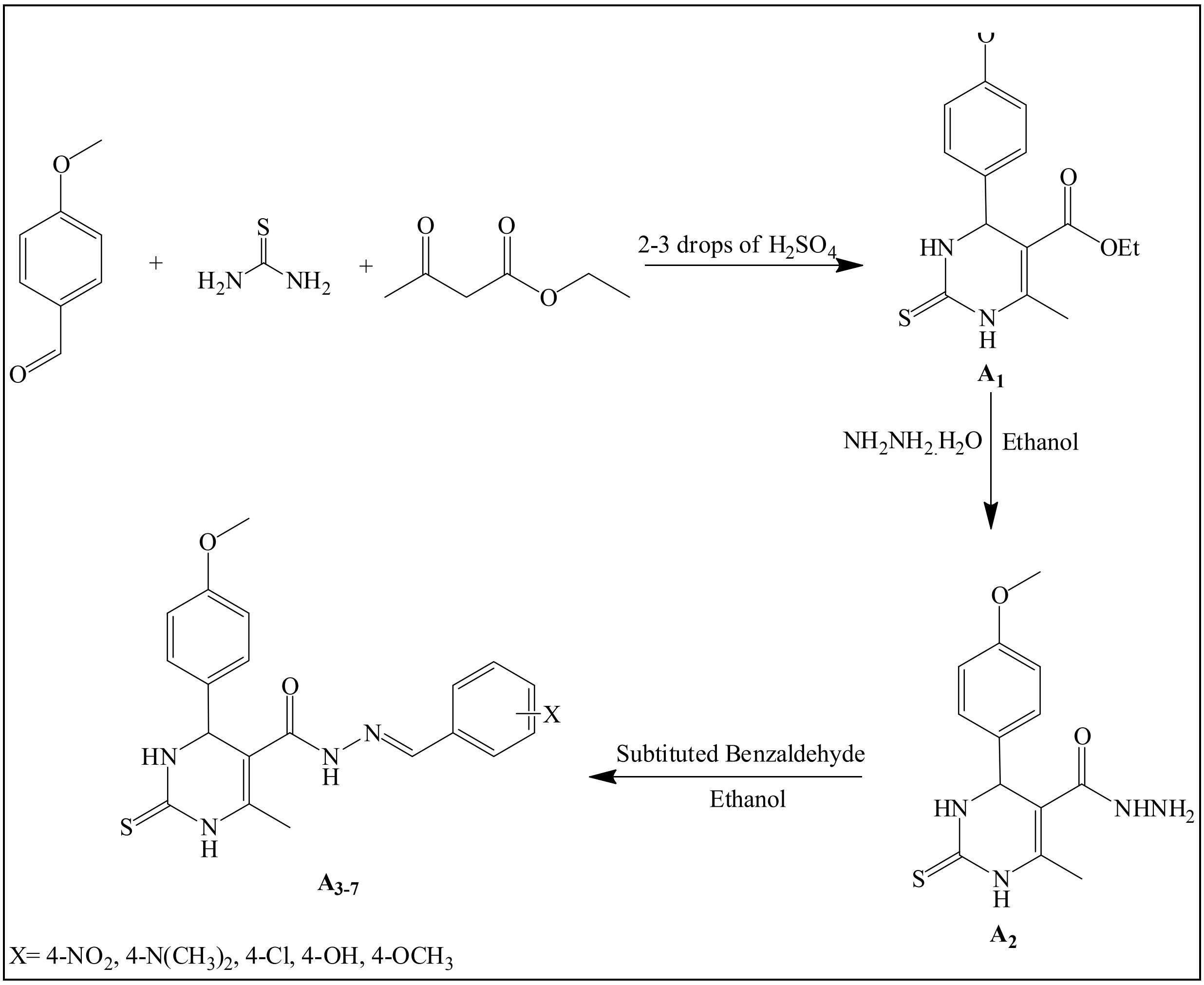
Yellow solid, mp: 228-230 ºC, Yield %: 80 %, IR spectrum, υ, cm^{-1}:3380-3313 (NH str.), 3075-3026 (Ar-CH str.), 2965 (aliphatic-CH str.), 1682, 1644 (C=O str.), 1601 (C=N str.), 1576, 1486 (C=C str.), 1435 (C-H bend), 1395 (C-N str.), 697 (C-Cl). ^{1}H-NMR (DMSO-d_6), δ, ppm: 3.8 (3H, s, CH_3), 4.4 (2H, s, CH_2),7.0-7.9 (9H, m, Ar-CH), 8.3(1H, s, CH), 8.7 (1H, s, NH), 11.5 (1H, s, NH).^{13}C-NMR (DMSO-d_6), δ, ppm: 41.19, 127.69, 128.78, 129.47, 129.90, 130.10, 130.55 131.48, 134.3, 138.83, 142.24, 143.25, 167.02, 171.08. High resolution mass spectrum (EI): Found: m/z 350.01 $[M]^+$, Calculated 350.04.

Discussion

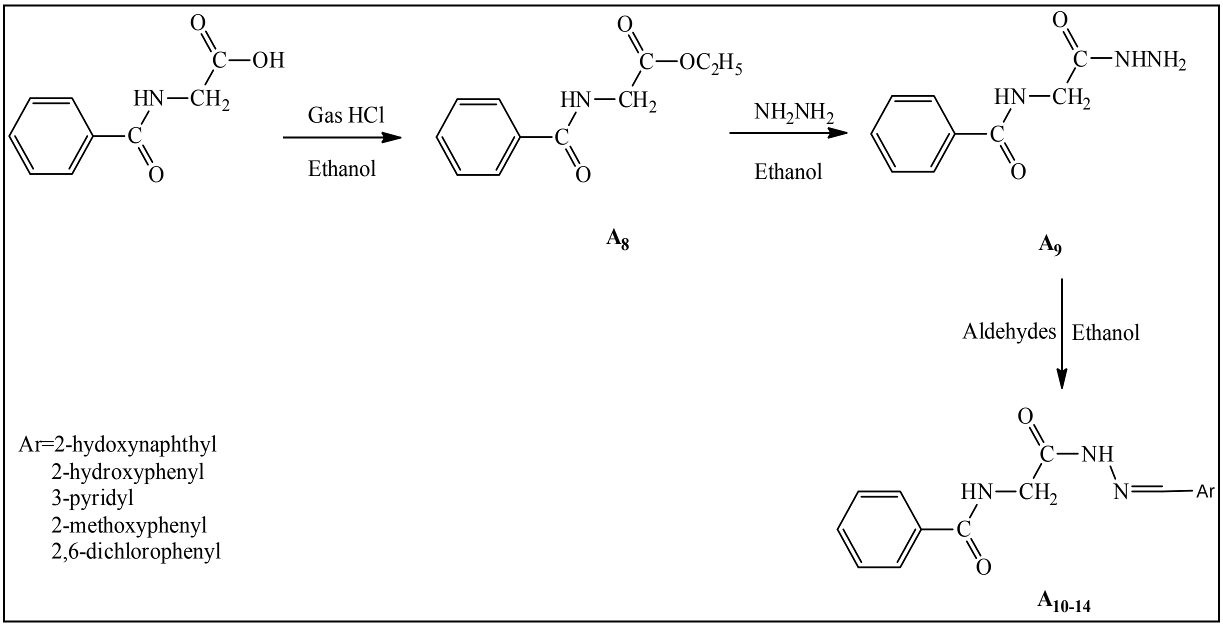
Hydrazides (A_2) and (A_9) were prepared by hydrazinolysis of their corresponding esters in absolute ethanol. The IR data of hydrazides (A_2) and (A_9) showed bands for N-H stretching absorbed at (3175 cm^{-1}) and (3299 cm^{-1}) , the C=O bond decrease in frequencies from (1733 cm^{-1}) and (1759 cm^{-1}) in ester compounds to new values (1660 cm^{-1}) and (1638 cm^{-1}) due to the resonance in hydrazide group. The ^{1}H NMR spectrum provide a perfect confirmation to the structure formation in which the hydrazide compound showed new singlet signal at (8.7 ppm), (12.0 ppm, 2H, s, for NH_2), while signals resonating at (4.3 ppm),), (11.1 ppm), related to NH of compound (A_9).

All the newly synthesized hydrazone compounds (A_{5-9}) (scheme 1) and (A_{10-14}) (scheme 2) showed satisfactory IR data .Strong C=O stretching band absorbed around at (1660-1670 cm^{-1}), (1628-1701 cm^{-1}) and C=N band absorbed around at (1601-1628 cm^{-1}) together with the N-H stretching bond absorbed at (3164-3335 cm^{-1}), (3182-3420 cm^{-1}) which are characteristic absorption of the hydrazone group. The ^{1}H NMR also confirms the presence of a value at (8.3-9.0 ppm) for N=CH (imine group) in hydrazone compounds, as well as the presence of both aromatic and pyrimidine ring protons as indicated within the data for these compounds.^{13}C NMR spectra for compounds (A_{3-7}) as it was indicated in their data presented above showed the presence of aromatic ring carbons (two equivalent carbons) for AB system resonating at (123 and 126 ppm) while pyrimidine carbons showed a value around (63 ppm) assigned to carbon attached to p-substituted ring and a value of (163 ppm) for carbon attached to methyl group while the thioxo carbon resonated within the range (167-173 ppm).

The results also revealed the presence of C=N resonating within (141-142 ppm) which is in agreement with similar published compounds [19]. Finally compounds (A_{10-14}) showed ^{13}C-NMR signals related to aromatic of hippuric moiety at (124, 128, 131 ppm) while the aryl ring (pyridyl ring for example) carbons appeared at (124, 134, 148 ppm) and the azo methine carbon C=N resonating within (142-144 ppm).

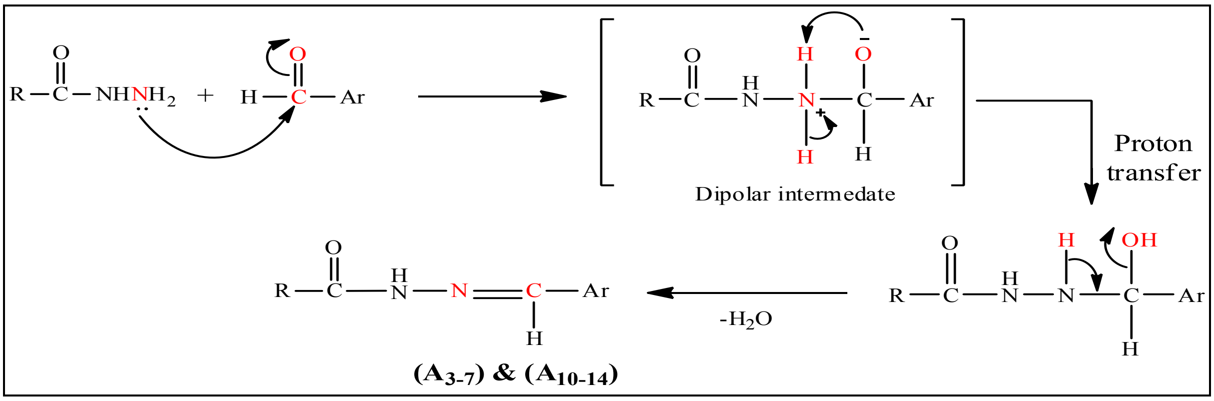


Scheme (1)



Scheme (2)

The mechanism of the formation of hydrazone compounds can be illustrated in the following scheme [20].



Scheme (3)

References

1. Rollas, S.; Gulerman ,N.; Erdeniz H., (2002), Synthesis and antimicrobial activity of some new hydrazones of 4-fluorobenzoic acid hydrazide and 3-acetyl-2,5-disubstituted-1,3,4-oxadiazolines. *Farmaco*, **57**; (2):171-174.
2. Pavan, F. R, Maia, PI da S, Leite SRA, et al. (2010), Thiosemicarbazones, semicarbazones, dithiocarbazates and hydrazide/hydrazones: Anti - Mycobacterium tuberculosis activity and cytotoxicity. *Eur J Med Chem*., **45**; (5):1898-1905.
3. Marastoni, M.; Baldisserotto, A.; Trapella, C.; McDonald, J.; Bortolotti, F.;Tomatis R., (2005), HIV protease inhibitors: synthesis and activity of N-aryl-N'-hydroxyalkyl hydrazide pseudopeptides. *Eur J Med Chem*., **(5)**; 445-451.
4. Tabanca, N..; Ali, A.;Bernier, UR.; et, al., (2013), Biting deterrence and insecticidal activity of hydrazide-hydrazones and their corresponding 3-acetyl-2,5-disubstituted-2,3-dihydro-1,3,4-oxadiazoles against Aedes aegypti. *Pest Manag Sci*., **69**; (6):703-708.
5. Turan-Zitouni, G.; Altintop, MD.; Ozdemir, A.; Demirci, F.; Mohsen,UA.and Kaplancikli, ZA., (2012), Synthesis and antifungal activity of new hydrazide derivatives. *J Enzym Inhib Med Chem*., **55**; (3).
6. Ashish Kumar, AJ. and JKM., (2012), A Highly Efficient Solvent Free Synthesis Of Hydrazides Using Grinding Technique. *An Int Q J Heterocycles*., **2**; (4):401-404.
7. Rollas S, Küçükgüzel ŞG., (2007), Biological activities of hydrazone derivatives. *Molecules*., **12**; (8):1910-1939.
8. Kobayashi, M. Goda, M.and Shimizu, S., (1999) Hydrazide synthesis: novel substrate specificity of amidase. *Biochem Biophys Res Commun*., **256**; (2):415-418.
9. Hanumanagoud, H.and Basavaraja, KM., (2013), Synthesis and biological evaluation of some new oxadiazole and pyrazole derivatives incorporating benzofuran moiety. *Der Pharma Chem*., **5**; (4):87-98.
10. Yassin, FA.and Seleim, AF., (2012), Synthesis and reactions of oxadiazolo , thiadiazolo and triazolo phthalazin- 1 (2 H) -one derivatives. *Der Pharma Chem*., **4**; (3):860-866.
11. Zabicky, J., **(1970)**, "The chemistry of amides" John wiley and Sons Ltd**.**
12. Govindasami, T., (2011), Synthesis, Characterization and Antibacterial Activity of Biologically Important Vanillin Related Hydrazone Derivatives. *Int J Org Chem*., **1**; (9):71-77.
13. Turan-Zitouni, G.; Altintop ,MD.; Ozdemir, A.; Demirci, F.; Mohsen, UA. Kaplancikli

ZA., (2012), Synthesis and antifungal activity of new hydrazide derivatives. *J Enzym Inhib Med Chem*., **77**; (2), 141-146.

14. Bernardino, AMR.; Gomes, AO.; Charret, KS.; et al., (2006), Synthesis and Leishmanicidal Activities of 1-(4-X-Phenyl)-N′- [(4-Y-phenyl)methylene]-1H-pyrazole-4-carbohydrazides. *ChemInform*., **37**; (27).

15. Sriram, D.; Yogeeswari, P.; Madhu K., (2005), Synthesis and in vitro and in vivo antimycobacterial activity of isonicotinoyl hydrazones. *Bioorg Med Chem Lett*. **15**; (20):4502-4505.

16. Srivastava, S.; Pandeya, SN.; Yadav, MK.; Singh BK., (2013), Synthesis and analgesic activity of novel derivatives of 1,2-substituted benzimidazoles. *J Chem*., **12**; (4):721-727.

17. Conway, SC, Perni RB., (1998), An Efficient One-Pot Synthesis of Hippuric Acid Ethyl Ester Derivatives. *Synth Commun*., **28**; (9):1539-1545.

18. Krishnan, HK, Muni NM, Sahruna NS., (2014), Synthesis and Anti-Inflammatory Activity of some 1, 2, 3-Benzotriazine Derivatives using 2-(4-oxo-6-phenylbenzo [d] [1, 2, 3] Triazin-3(4H)-yl) Acetohydrazide as a Starting Material. *J Adv Chem*. , **4**; (1):266-275.

19. Harsha , I. N. , Reshma N. I., Manoj K. and Prabhjeet K., (2014), Synthesis and in-vitro screening of novel dihydropyrimidine derivatives as potential calcium channel blockers, *Der Pharma chemical*; **6**; (2),221-227.

20. Roy SR, Jadhavar PS, Seth K, Sharma KK, Chakraborti AK., (2011), Organocatalytic application of ionic liquids: [bmim][MeSO4] as a recyclable organocatalyst in the multicomponent reaction for the preparation of dihydropyrimidinones and -thiones. *Synthesis (Stuttg)*., **14**; 2261-2267.

تحضير بعض الهيدرازيدات الجديدة ومشتقاتها

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الخلاصة

تم تحضير هيدرازيدات جديدة وتمثل المركبات (A_2 و A_9) من استراتها المقابلة (A_1 و A_8) وهذه الاسترات تم تحضيرها من موادها الأولية 5– ايثوكسي كاربونيل (4– ميثوكسي فنيل) – 6 – مثيل –4,3,2,1 –رباعي هايدرو بيريمدين –2 – ثايون (A_1) عن طريق تفاعل متعدد المكونات وكذلك من حامض الهبيوريك على التوالي . هذه الهيدرازيدات تم مفاعلتها مع بعض الألدهايدات مكونة الهايدرازونات المقابلة (A_3 –7) و (A_{10} –14). تم تشخيص المركبات المحضرة بالطرق الطيفية المتمثلة بـ IR,^{1}H-NMR,^{13}C-NMR و طيف الكتلة وتمت مناقشتها.

كلمات مفتاحية: أستر، هيدرازيد، هيدرازون، قواعد شيف.