Preparation and Study Biological Activity of New Heterocyclic Derivatives from 4-Aminoacetophenone

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Abstract
Chalcon and a number of its derivatives for Chalcon were prepared from the reaction of 4-aminoacetophyton with some benzaldehyde derivatives in a basic solution. Respectively, the reaction was followed up using thin layer chromatography (TLC). Through FT-IR, H-NMR spectroscopic measurements and melting points, the structures of the new heterocyclic rings can be distinguished.
Keywords: chalcon, thiazine, oxazine, pyrazole and aminoacetophenon.

1. Introduction

Chalcons is α,β –unsaturated carbonyl compound is named phlovanedes compound [1] was synthesised from condensation of Aryl Ketons with Aromatic aldehydes in strong base. [2], the name of chalcone come from Tamber and Kostaneki a few the product of aldol condensation. [3] or claisen-Schimdt condensation [4],There are many ways to prepare chalcons, including the preparation of chalcon in the basic medium, which is one of the most common methods of preparation.) The chalcon Chalcons was prepared using the microwave, which is characterized by not being use solvent [5]. Chalcons have very importantes applications for biological activity [6], anti-virus [7].

Pyrazol:

Pyrazole was obtained by E. Buchner by heating pyrazole 3.4.5.-tricarboxylic acid [6] pyrazole ring few hokel ring (4n + 2)=πe) and have very important application biological [8] aniti .As for the enzymatic studies

Oxazine:

Sixmean bared ring have three isomers (1,2 or 1,3 or 1,4-oxazine the first Synthesis by Hokey and cope at 1944 via mannich reaction (on via) [9].
Oxazine have many an application anti [10].

Thiazine:

raniting sixmembard hetrocyclic ring found by three isomers 1,2and 1,3 and 1,4 thiazine. [11].Due to the papological importance of thiazine, derivatives have been prepared as antibacterials and anti-bacterials [12] and antifungal [13] and anesthetic [14].

Experimental

Most of the chemicals were purchased from Fluke and BDH chemical Ltd. The measurements were generally made using an electrothermal melting point device (Electro thermal, melting point, 9300_U.K) and recording of the (H_NMR) protein NMR spectra using DMSO as a solvent and tetramethylsilane (TMS) as an internal standard using Brocker(300 MHz) as well as Shimadzu FTIR-prestige Fourier transform infrared spectrophotometer. In Shahid Beheshti University of Medical Sciences and Health Services, Tehran,Iran.

1-Chalcone (S1) [15, 16].

(2Z)-1-(4-aminophenyl)-3-(3-bromophenyl) prop-2-en-1-one

Dissolve (0.01mole 1.35) of (aminoacetophenone-4) in (50mL) of absolute ethanol with continuous stirring until dissolution on the magnetic stirrer for a period of (30 min) at laboratory temperature, then (10mL) of sodium hydroxide solution was added At a concentration of (10%), then (1.85g, 0.01mole) of 3-bromobenzyldehyde was slowly added to the prepared solution through the first step with continuous stirring for (8hrs) on a magnetic stirrer at room temperature, and the course of the reaction was followed up by technical means. (TLC) using a solution of (Ethanol Absolute - dry benzene 2:3), then the reaction mixture was neutralized with dilute (HC) acid. It was left 24hrs in the refrigerator to form the most percentage of the precipitate. times to get rid of the salt and to ensure that the salt is removed using a silver nitrate solution, then dried and recrystallized using absolute ethanol

2-Thiazine

4-(4-aminophenyl)-6-(3-bromophenyl)-2H-1,3-thiazin-2-amine

[17] A mixture of chalcon (S1) (0.302 gm,0.001 mol),thiaurea (0.076 gm,0.001 mol) were dissolved in(40 ml) absolute ethanol and sodium hydroxide (10 %) was refluxed 3 hrs, then pourd into 20 ml cold water with continuous stirring two an hour and then kept in refrigerator for 24 hrs. The product was filtered,washed and recrystallized by absolute ethanol and monitored by T.L.C (2ml methanol:4ml benzene).

3-Oxazine

4-(4-aminophenyl)-6-(3-bromophenyl)-2H-1,3-oxazin-2-amine

[17] A mixture of chalcon (S1) (0.604 gm,0.002 mol),Urea (0.12 gm,0.002 mol) were dissolved in(20 ml) absolute ethanol and sodium hydroxide (10 %) was refluxed 8 hrs, then pourd into 20ml cold water with continuous stirring two an hour and then kept in refrigerator for 24 hrs. The product was filtered,washed and recrystallized by absolute ethanol and monitored by T.L.C (2ml methanol:4ml benzene).

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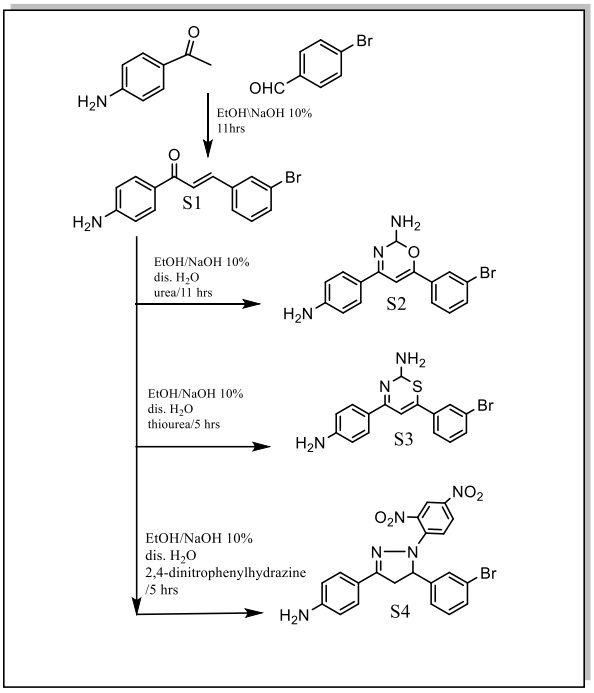
4- Pyrazol

4-[5-(3-bromophenyl)-1-(2,4-dinitrophenyl)-4,5-dihydro-1H-pyrazol-3-yl]aniline

A mixture of chalcon (S1) (0.302 gm,0.001 mol),2,4-Dinitro phenyl hydrazine (0.198 gm,0.002 mol) were dissolved in(20 ml) absolute ethanol and sodium hydroxide (10 %) was refluxed 3 hrs, then pourd into 20ml cold water with continuous stirring two an hour and then kept in refrigerator for 24 hrs. The product was filtered,washed and recrystallized by absolute ethanol and monitored by T.L.C (2ml methanol:4ml benzene).



Scheme (1) of Synthesis of compounds (S1 - S4)

2. Results and Discussion

Spectra (FT-IR). As for the chalcon (S1) the appearance refers to the carbonyl form of chalcone (C=O) (1741)Cm-1, as well as the appearance of nitrogen and bromine radiation in (1170) Cm-1 (661) Cm-1. and (C=C) Aromatic in (1591)Cm-1 and (NH2) in the range (3327) Cm-1, (CH-) Aromatic in the range (3057)Cm-1 and (CH-) aliphatic (2858)Cm-1. When we are using (1H-NMR) spectrum and by used [DMSO-d6] as solvent prepared many singes for protons such as (CH=CH) to chalcon ring at (6.21-6. 62) ppm for protons aromatic at (7.40 -8.18) ppm and for [DMSO-d6] at(2.50) ppm.

Spectra (FT-IR). As for the chalcone derivative (S2) the disappearance of the Carbonyl C=O band in the compound and the survival of the C=N band in the (1600) Cm-1 region and the appearance of the (C-S) absorption band in the (1224) Cm-1 region and the C=C absorption band in the (1566) Cm-1 region and the appearance of the band C-N absorption in (1172) Cm-1 region and NH2 absorption band in (3336) Cm-1 region and (-CH) absorption band Aromatic in situ (3055)Cm-1.

When we are using (1H-NMR) spectrum and by used [DMSO-d6] as solvent prepared many singes for protons such as (CH=CH) to Thiazine ring at (8.18) ppm for protons aromatic at (7.38 -7.81) ppm and for NH2 at (8.18) ppm and for (CH-S) at (6.22- 6.62)ppm and for[DMSO-d6] at (2.28) ppm.

Spectra (FT-IR). As for the chalcon derivative (S3) the disappearance too of the Carbonyl C=O band in the compound and the survival of the C=N band in the (1618) Cm-1 region and the appearance of the (C-O) absorption band in the (1724) Cm-1 region and the C=C absorption band in the (1552) Cm-1 region and the appearance of the band C-N absorption in (1016) Cm-1 region and NH2 absorption band in (3331) Cm-1 region and (-CH) absorption band Aromatic in situ (3055)Cm-1.

When we are using (1H-NMR) spectrum and by used [DMSO-d6] as solvent prepared many singes for protons such as (CH=CH) to Oxazine ring at (3.37) ppm for protons aromatic at (7.40 -7.96) ppm and for (NH2-CH) at (8.18)ppm and for (CH-O) at (6.21- 6.62)ppm and for[DMSO-d6] at (2.50) ppm.

Spectra (FT-IR). As for the chalcone derivative (S4) Also, the disappearance of the carbonyl C=O band in the compound and the appearance of the C=N band in the region of (1616)Cm-1 and the appearance of the NO2 absorption band in the (1554) Cm-1 region and the C-C absorption band in the region (1579) Cm-1 and the absorption band NH2 in the (3331) Cm-1 region and the aromatic (-CH) adsorption band at the (3055) Cm-1 region and the appearance of the N-N absorption band in the (1174) Cm-1 region and the C-N absorption band in the (1016) Cm-1 region.

When we are using (1H-NMR) spectrum and by used [DMSO-d6] as solvent prepared many singes for protons such as (CH=CH) to pyrozoline ring at (3-37) ppm for protons aromatic at (7.39 -7.81) ppm and (CH-NO2) at (8-81)ppm and for [DMSO-d6] at (2.50) ppm.

Table(1): physical preparation for synthesis compounds (S1-S4)

NO.	Molecular Formula	M.WT	C MPC	RF	COLOR	Yield
S1	C15H12NOBr	302	165C	0.9	Yellow	96.11%
S2	C16H14N3SBr	360.27	185 C	0.7	Yellowish brown	70.25%
S3	C16H14N3OBr	344.27	187 C	0.5	Yellow	82.51%
S4	C21H16N5O4Br	480.29	182 C	0.2	Dark brown	36.78%

Biological tests

Biological activity of galcon (S1) and its derivatives (S4,S3,S2) were taken and dissolved in Dmso solvent, and their effect on two types of bacteria, Staphylococcus aureus G + and - Escherichia coil G- was studied. The **inhibition of heterogeneous cyclic compounds was measured with a ruler as shown in the following table:**

Table (2): The biological activity of the compounds

compounds	Anti-Bacterial Activity	
	Staphylococcus Aureus mm	Escherichia Colimm
S1	0	6
S2	0	0
S3	13	8
S4	11	0

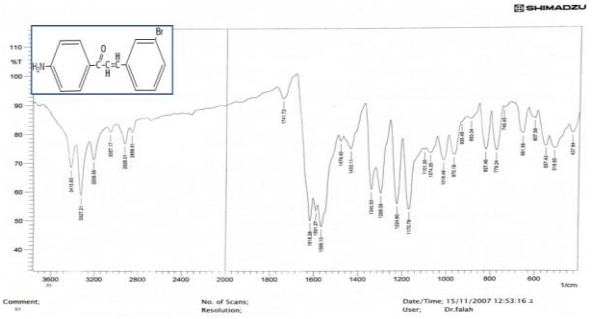


Figure 1;FTIR Spectrum for Compound S1

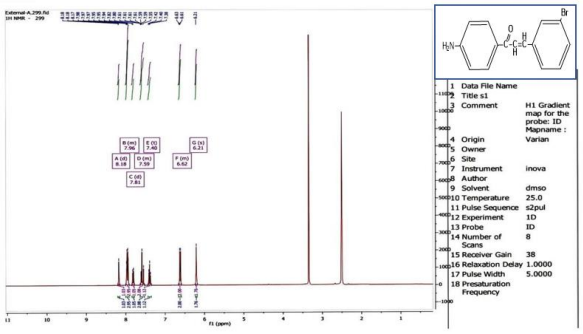


Figure 2;HNMR Spectrum for Compound S1

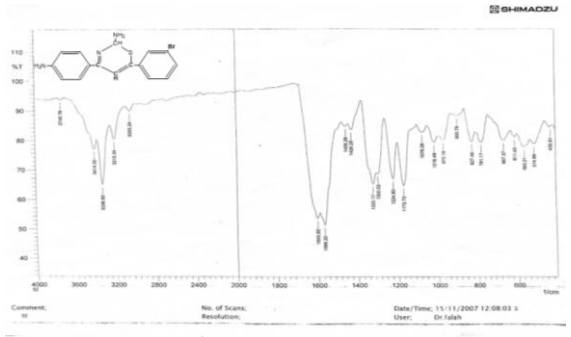


Figure 3;FTIR Spectrum for Compound S2

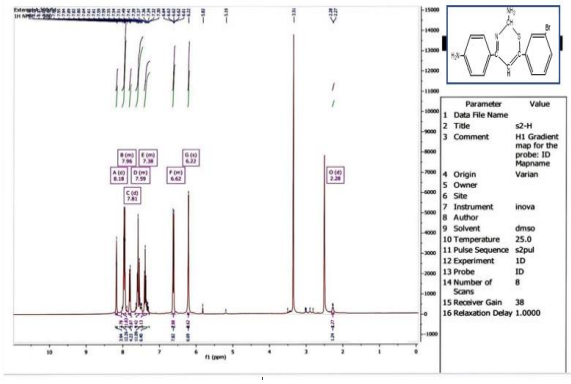


Figure 4;HNMR Spectrum for Compound S2

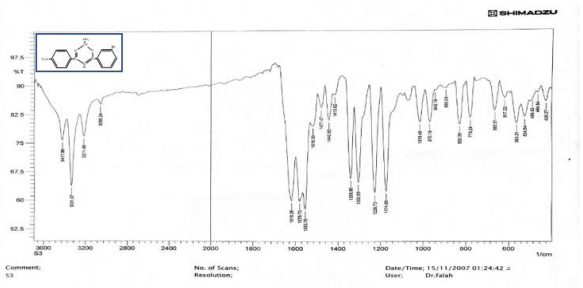


Figure 5;FTIR Spectrum for Compound S3

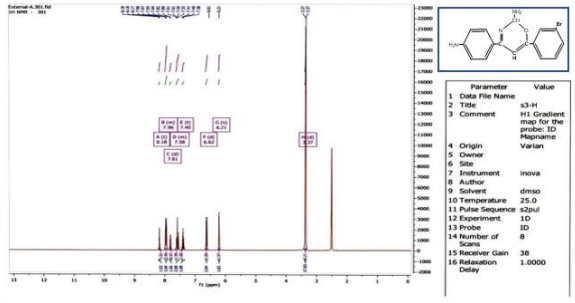


Figure 6;HNMR Spectrum for Compound S3

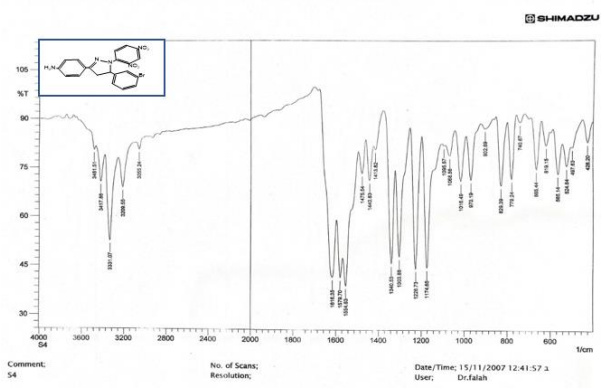


Figure 7;FTIR Spectrum for Compound S4

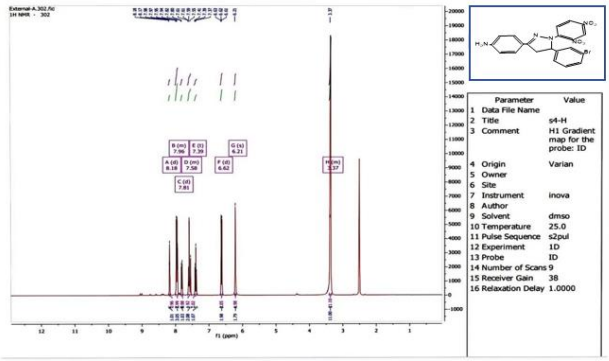


Figure 8;HNMR Spectrum for Compound S4

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