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Synthesis and Characterization of (4-{[(substituted phenyl) imino] methyl}phenoxy)acetic acid

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ABSTRACT

Heterocyclic Compounds having a valuable place in a Heterocyclic Chemistry and Heterocyclic Compounds having a excellent properties such as drugs, dyes etc, This compounds are showing anti microbial , anti fungal , anti bacterial , anti inflammatory , anti diabetic , anti hypertensive etc. properties. In present investigation, we have prepared (4-{[(substitutedphenyl)imino]methyl} phenoxy)acetic acid from (4-formylphenoxy)acetic acid and substitutedaniline by using ethanol as a solvent. Physical properties of pure crystallized prepared (4-{[(substitutedphenyl)imino]methyl}phenoxy)acetic acid like M.P elementary analysis and spectral data of compound and such as IR and NMR will be evaluated and confirm the structure of compound.

Key Words : synthesis, substitutedaniline, schiffbase, DMSO.

INTRODUCTION

Schiff bases are widely employed in synthetic organic and inorganic chemistry. They were reported to show diverse biological activity[1-5] and have many applications as ligands in coordination chemistry of transition metals[6-9].

From the literature, we found that several schiffbase derivatives are known to display microbiological[10] activity and antifungal properties[11]. Literature survey reveals scant mention of the above compounds with antimicrobial properties and hence more and more derivatives are worth tested for the possible medicinal applications. So we have decided to synthesis (4-{[(substitutedphenyl) imino]methyl}phenoxy)acetic acid.

MATERIALS AND METHODS

Melting points were taken in open capillary tube and were uncorrected. IR spectra (KBr) were recorded on I.R. Spectrophotometer of Buck scientific Model No. 500 and instrumentused for NMR Spectroscopy was Bruker Advance II 400 and DMSO used as internal standard. Solvent used were $CDCl_3$ and DMSO. Purity of the compounds were checked by tlc on silica- G plates.

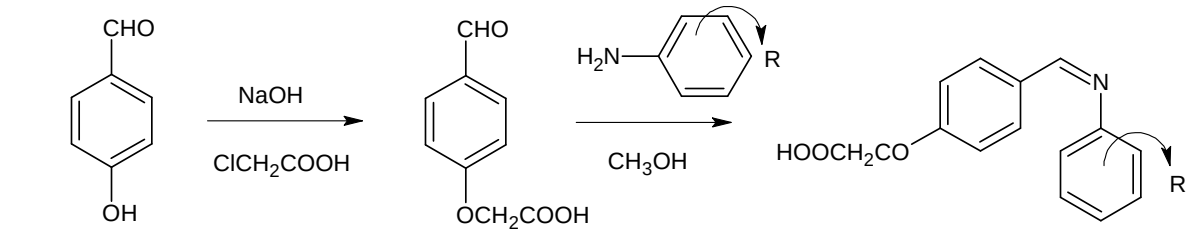
Preparation of (4-formylphenoxy)acetic acid (PA-A).
To a mixture of 5 gm of 4-hydroxy benzaldehyde, 4gm of chloroacetic acid and 30 ml of water cantained in a 250 ml round bottomed flask. add slowly a solution of 3.3 gm of sodiam hydroxide in 87.5 ml of water. Heat the mixture to boiling with stirring and reflex for 3 hours the solution acquires a red brown colour Cool and acidity the solution

with 7.5 ml. of con. HCl .the solid crystals appear in the solution. The yield of the product was 70% and the product melts at 155°C. Found: C(59.98%) H(4.45%), Calcd. for $C_9H_8O_4$: C(60.00%) H(4.48%)

Preparation of {4-[(phenylimino)methyl]phenoxy}acetic acid (PA-01-10)

A mixture of (4-formylphenoxy)acetic acid(0.01M), aniline(0.01M) and methanol(30ml) was heated for about 5 min. in a beaker (250 ml) to get a clear solution. The solution was kept overnight at room temperature to get the respective crude solid which was recrystalized from ethanol to obtain the pure crystals of {4-[(phenylimino)methyl] phenoxy}acetic acid respectively. IR (KBr) ; PA-04 (cm^{-1}) : 3050(C-H, aromatic), 2920(C-H, aliphatic ring), 2580-OH,carboxylic, 1720(>C=O), 1660(>C=N-), 1580(>C=C<, aromatic ring), 1480(-CH_2-, band.), 1375(-CH_3, band.), 1285(C-N). ^{1}H NMR (DMSO); PA-07: 4.6911, singlate (2H) (-CH_2-), 8.3424, singlate (1H) (Ar-CH=N-), 6.8918-8.3976, multiplate (8H) (Ar-H), 9.7746, singlate (1H) (-OH).

Reaction Scheme

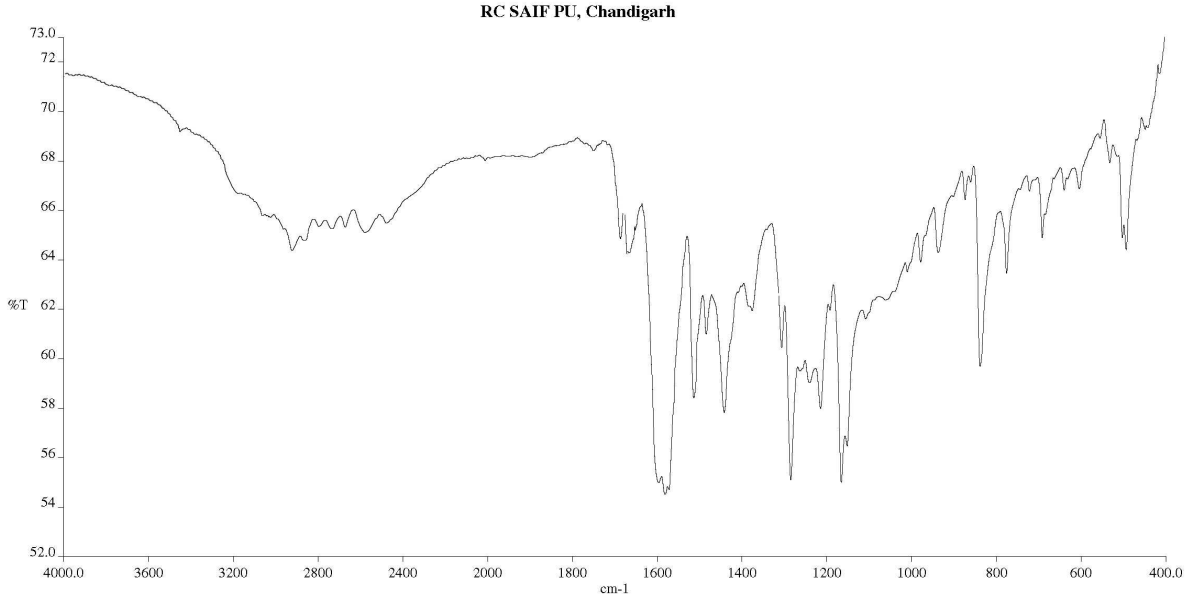


4-hydroxybenzaldehyde (4-formylphenoxy)acetic acid **PA-01-10**

PA-A (4-{[(substitutedphenyl)imino]methyl}phenoxy)acetic acid

Table : 1 Physical constant of (4-{[(substitutedphenyl)imino]methyl}phenoxy)acetic acid

No.	Sub. No.	R	Molecular Formula	Mol. Wt. (g/m)	Yield (%)	M. P. °C	Carbon (%)		Hydrogen (%)		Nitrogen (%)	
							Found	required	Found	required	Found	required
1	PA-01	1-Phenyl	$C_{15}H_{13}NO_3$	255.26	72	143	70.55	70.58	5.11	5.13	5.47	5.49
2	PA-02	1-Naphthyl	$C_{19}H_{15}NO_3$	305.32	78	153	74.72	74.74	4.91	4.95	4.56	4.59
3	PA-03	-4-CH_3	$C_{16}H_{15}NO_3$	269.29	80	150	71.32	71.36	5.60	5.61	5.17	5.20
4	PA-04	-3-CH_3	$C_{16}H_{15}NO_3$	269.29	70	141	71.33	71.36	5.57	5.61	5.18	5.20
5	PA-05	-2-NO_2	$C_{15}H_{12}N_2O_5$	300.26	73	136	59.98	60.00	4.00	4.03	9.29	9.33
6	PA-06	-3-NO_2	$C_{15}H_{12}N_2O_5$	300.26	79	110	59.97	60.00	4.00	4.03	9.28	9.33
7	PA-07	-4-NO_2	$C_{15}H_{12}N_2O_5$	300.26	81	127	59.98	60.00	3.99	4.03	9.30	9.33
8	PA-08	-2-Cl	$C_{15}H_{12}ClNO_3$	289.71	77	140	62.16	62.19	4.15	4.17	4.80	4.83
9	PA-09	-3-Cl	$C_{15}H_{12}ClNO_3$	289.71	75	132	62.15	62.19	4.14	4.17	4.80	4.83
10	PA-10	-4-Cl	$C_{15}H_{12}ClNO_3$	289.71	71	158	62.14	62.19	4.15	4.17	4.79	4.83


RC SAIF PU, Chandigarh
%T
cm-1
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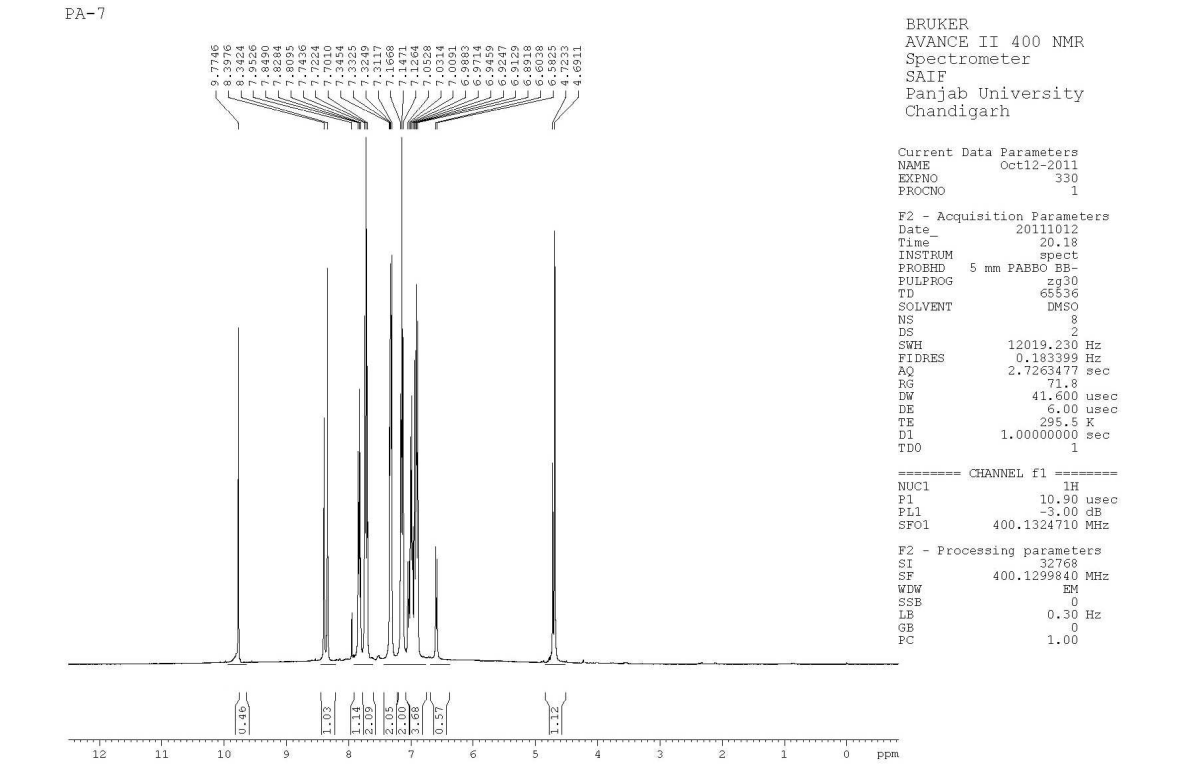
Date Created: wed nov 16 12:57:55 2011 India Standard Time (GMT+5:30)


PA-7
BRUKER
AVANCE II 400 NMR
Spectrometer
SAIF
Panjab University
Chandigarh
ppm

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