www.pharmaerudition.org

ISSN: 2249-3875

International Journal of Pharmaceutical Erudition

Research for Present and Next Generation

NOV 2018
Vol: 08 Issue:03
(1-5)

ISSN 2249-3875

International Journal of Pharmaceutical Erudition

Research Paper

SYNTHESIS, CHARACTERIZATION AND PHARMACOLOGICAL EVALUATION OF NOVEL SUBSTITUTED HYDRAZIDE DERIVATIVES

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The present work, which has undertaken is bonafied, and novel for the synthesis of hydrazide derivatives. In this view we have made an attempt in reviewing the literature on substituted hydrazide for their medicinal significance with help of chemical abstract, journals and internet sites. According to scheme the compounds were synthesize from IIIa to Va and were tested for the preliminary tests, physical constants and TLC and compound were confirmed by IR spectra. Observational data indicated the synthesize compounds appropriate.The all the compounds will be synthesize and evaluated for analgesic and *In-vitro* Anti-cancer activity

Key Words: Analgesic, Anti-cancer, TLC, NMR, IR, Hydrazide.

INTRODUCTION

Hydrazones are principle compounds for drug design, as possible ligands for metal complexes, organocatalysis and also for the synthesis of heterocyclic compounds.[6-8]The ease of preparation, increased hydrolytic stability relative to imines, and tendency toward crystallinity are the desirable characteristics of hydrazones. Due to these positive traits, hydrazones have been under study for a long time, but much of their basic chemistry remains unexplored.

Hydrazones is a class of organic compounds having the basic structure $R_1R_2C=NNH_2$. They are related to aldehydes and ketones, by the replacement of the oxygen with the $-NH_2$ group. They are derived by the condensation of substituted hydrazides with carbonyl compounds namely aldehydes and ketones. They are formed by the action of hydrazine on ketones or aldehydes. Hydrazones are azomethines characterized by the presence of the triatomic grouping >C=N-N<. They are distinguished from other member of this class (imines, oximes etc.) by the presence of the two interlinked (–N– N–) nitrogen atoms. According to the needs of a polydentate ligand, the group functionalities are increased by condensation and substitution. Hydrazones are usually named after the carbonyl compounds from which they are obtained.

Material and Method:

Synthetic Procedure:

A mixture of 2-chlorobenzaldehyde (2mmol) and 4-aminophenol (2.1mmol) in Dimethyl formamide (20ml) were stirred at room temperature for 1-5 hr in the presence of two drops of $CuCl_2$ as a catalyst. The end of the reaction will observed by TLC. The resulting precipitate will filtered, willhed with 20 ml water and dried and recrystallized by ethanol.[101]

Synthesis of 2-(4-aminophenoxy) benzoic acid (IIIa):

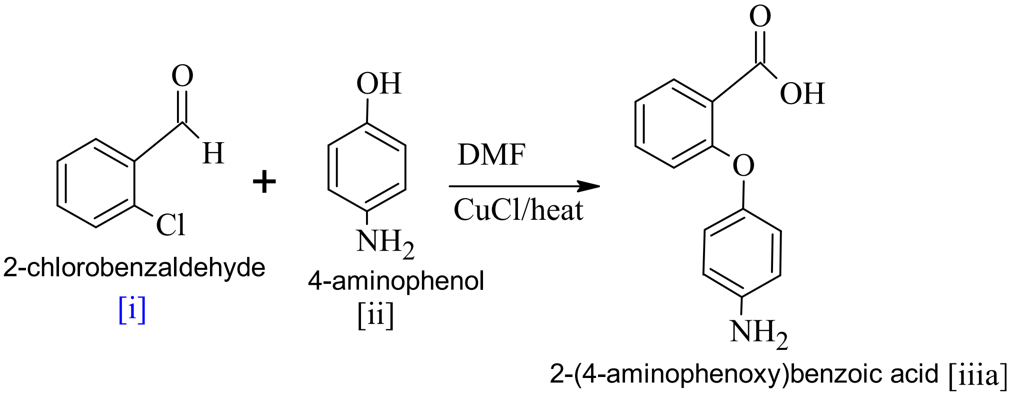
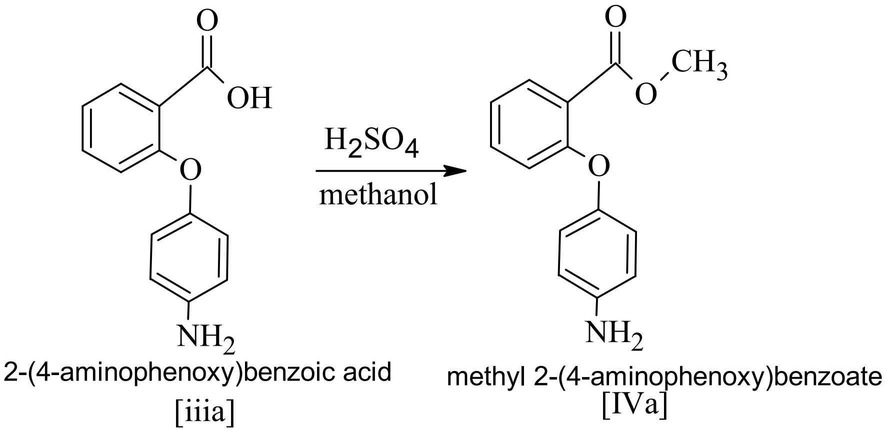


Table 1: Analysis of 2-(4-aminophenoxy) benzoic acid (IIIa)

Comp. Code	Mol. Formula	Melting point Range (^{0}C)	% yield	*Rf value
IIIa	$C_{13}H_{11}NO_3$	267-268	85.23	0.51

***Solvent System for TLC:** ethanol: n-hexane (35:65)

Synthesis of methyl 2-(4-aminophenoxy) benzoate (IVa):



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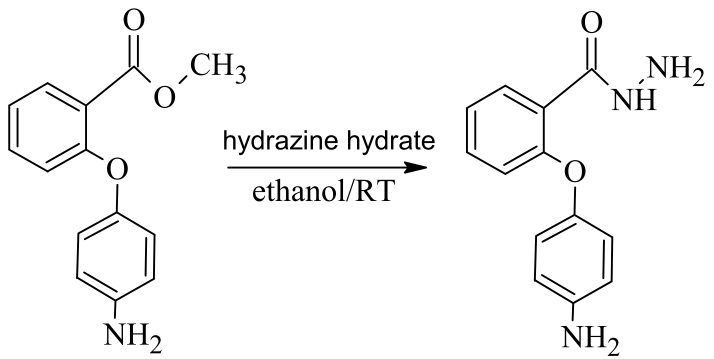
In 100 ml of two necked RBF having dropping funnel and calcium guard tube, place 2-(4-amino phenoxy) benzoic acid and 0.0216 mole of sulphuric acid in Methanol. Stir the mixture at 0-10° C for near about 15 minutes. The mixture will pour with good stirring into ice-cold hydrochloric acid, follow by small volume of ice-cold water. The product will collect on a Buchner funnel. Willhing will continue till no more pyridine will present. The product will air-dry at room temperature and recrystallize from methanol.[102]

Table 2: Analysis of methyl 2-(4-aminophenoxy) benzoate (IVa)

Comp. Code	Mol. Formula	Melting point Range (^{0}C)	% yield	*Rf value
IVa	$C_{14}H_{13}NO_3$	192-93	66.72	0.87

***Solvent System for TLC:** Ethylacetoacetate: etahnol (40:60)

Synthesis of 2-(4-aminophenoxy) benzoate hydrazide (Va):



methyl 2-(4-aminophenoxy)benzoate
[IVa]

[Va]

methyl 2-(4-amino phenoxy) benzoate **IVa**(5.0 mmol) will dissolved in ethanol under continuous stirredat room temperature 2 hrs with 5 mL of the hydrazine hydrate. The reaction mixture will cooled (2-5^{o}C), diluted with water, the formed precipitate will filtered and crystallized from appropriate solvent give compound **Va**.

Table 3: Analysis of 2-(4-aminophenoxy) benzoate hydrazide (Va)

Comp. Code	Mol. Formula	Melting point Range (^{0}C)	% yield	Rf value
Va	$C_{13}H_{13}N_3O_2$	210-211	78.62	0.63

Synthesized Compounds

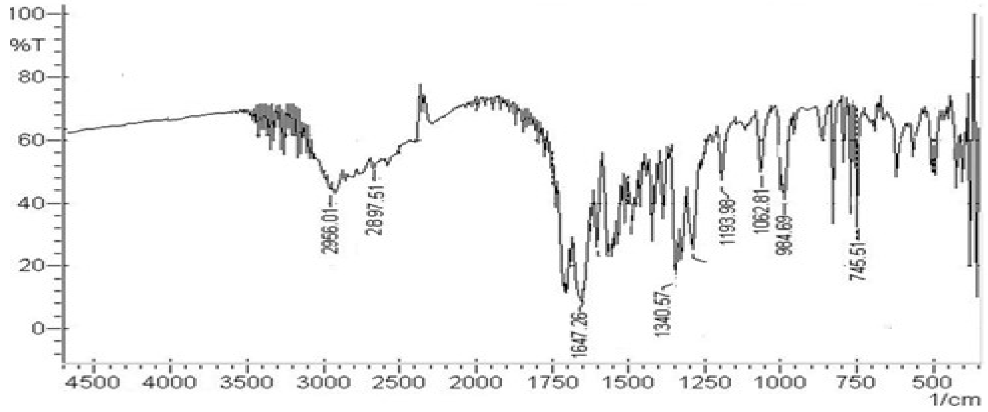


Fig 1: FTIR evaluation of 2-(4-aminophenoxy) benzoic acid (IIIa)

Table 4:-Spectral Characteristics

Compound code	IR (cm^{-1})
Comp-IIIa	OH -2956, C=O 1647, NH_2 -1304, Ar-CH- Streaching 2897-2955

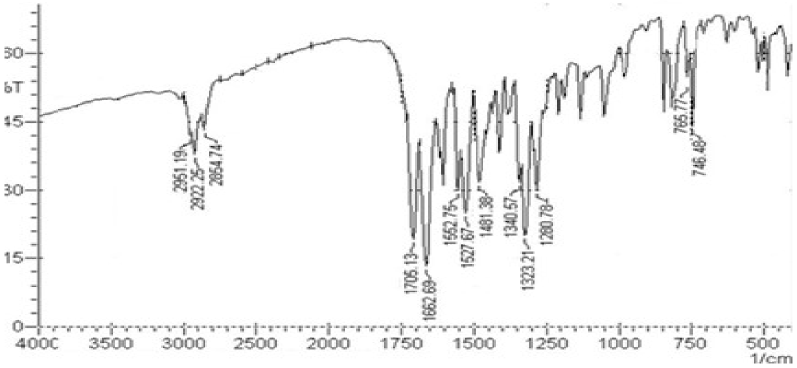


Fig 2:FTIR evaluation of methyl 2-(4-aminophenoxy) benzoate (IVa):

Table 5:-Spectral Characteristics

Compound code	IR (cm^{-1})
Comp-IVa	OCH_3 -1662, C=O -1705, C-N -1323, Ar-CH- Streaching 2854-2951

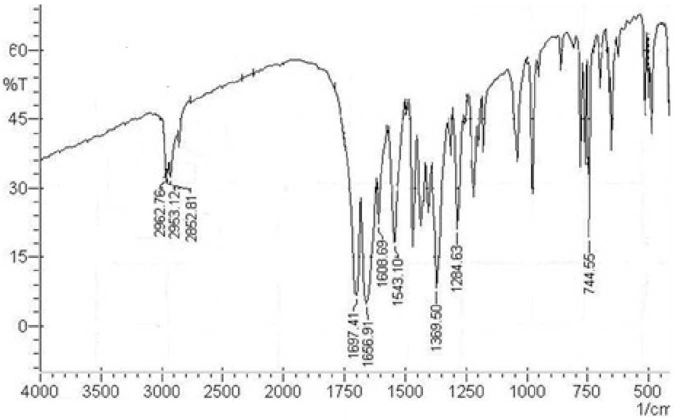


Fig 3: FTIR evaluation of 2-(4-aminophenoxy) benzoate hydrazide (Va):

Table 6:-Spectral Characteristics

Compound code	IR (cm^{-1})
Comp-IVa	OCH_3 -1662,C=O -1697, NH_2 -13692962, Ar-CH- Streaching 2962-2953

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