

NOTE

**Synthesis of 1-(phenylsulphonyl)-3,5-diarylpyrazoles/
1-(3-chlorophenyl)-3,5-diarylpyrazoles**

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New 1-(phenylsulphonyl)-3,5-diarylpyrazoles (4) have been synthesised by the action of benzene sulphonyl hydrazide with 1,3-diaryl-propane-1,3-diones (3) in DMF solvent. New 1-(3-chlorophenyl)-3,5-diarylpyrazoles (5) have been synthesised by the action of 3-chlorophenyl hydrazide hydrochloride with 1,3-diaryl-propane-1,3-diones (3) in pyridine solvent.

Key Words: Synthesis, 1-(Phenylsulphonyl)-3,5-diarylpyrazoles, 1-(3-chlorophenyl)-3,5-diarylpyrazoles.

Various pyrazoles play an important role as pharmaceuticals; they have been found to possess antibacterial activity¹ and antimicrobial activity.² They are known for their versatile physiological activity.³ They have been reported to possess pharmacological activities and anticancer activities.⁴ Some pyrazoles are reported to possess herbicidal activity,⁵ antidiabetics⁶ and pesticides.⁷ Pyrazoles act as hypolipidemic agents.⁸ Pyrazoles have been prepared by catalytic dehydration of pyrazolines.⁹ They possess fungicidal activity.¹⁰ Hydroxy chalcones are reported to react with hydrazine hydrate to give pyrazoles.¹¹

The common method for the synthesis of bis-pyrazoles is one that involves the reaction of hydrazines and derivatives of hydrazines with β -diketones in different solvents like pyridine, DMF, ethanol, acetic acid, etc. But it was observed from the literature survey that synthesis of titled pyrazoles from 1,3-diaryl-propane-1,3-diones has not yet been reported.

The present work deals with the synthesis of pyrazoles by the reaction of benzene sulphonyl hydrazine and 3-chlorophenyl hydrazine hydrochloride with 1,3-diaryl-propane-1,3-diones in DMF/pyridine as solvent.

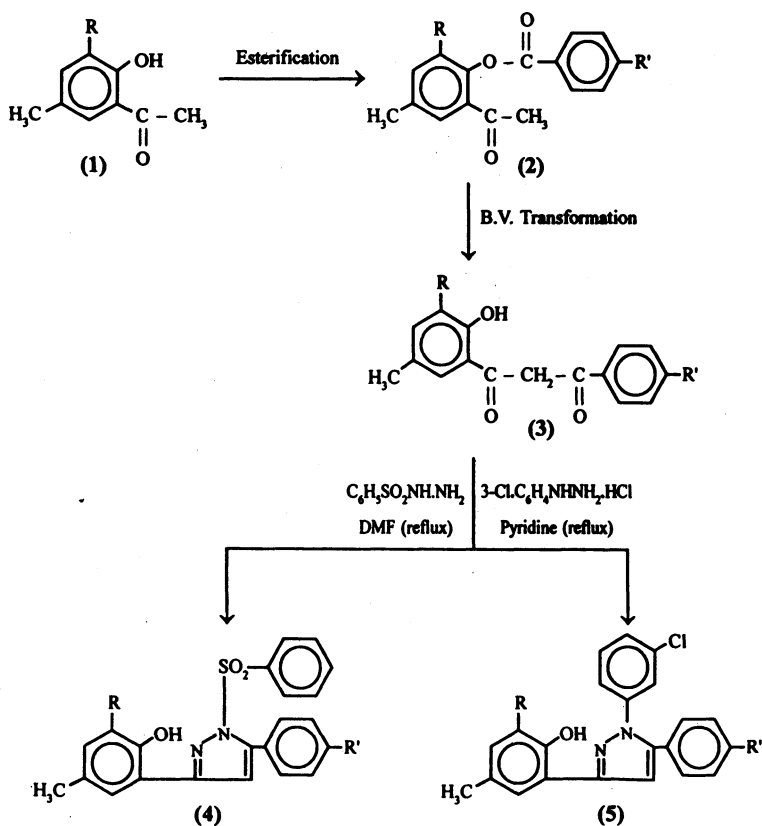
The structures of these compounds have been established on the basis of elemental analysis and spectral analysis (IR, NMR).

Preparation of 1-(phenylsulphonyl)-3,5-diarylpyrazoles (4)

1,3-Diaryl-propane-1,3-dione (3) (0.01 M) was refluxed with benzene sulphonyl hydrazide (0.02 M) for 6 h in DMF solvent. The reaction mixture was decomposed by water containing a little HCl. The semi-solid was triturated with alcohol-acetic acid mixture. The product obtained was filtered and crystallised from ethanol and acetic acid mixture. The physical and analytical data of the compounds are presented in Table-1.

TABLE-1
PHYSICAL DATA OF PYRAZOLES

Compds	R	R'	m.p. (°C)	Yield (%)	N% Found (Calcd.)	R _f
4a	H	H	141	65	6.90 (7.17)	0.65
4b	H	OCH ₃	140	65	6.72 (6.66)	0.60
4c	Br	H	145	38	5.04 (5.97)	0.61
4d	Br	OCH ₃	175	46	5.58 (5.61)	0.58
5a	H	H	138	59	7.65 (7.76)	0.71
5b	H	OCH ₃	125	55	6.80 (7.17)	0.66
5c	Br	H	120	84	6.59 (6.37)	0.70
5d	Br	OCH ₃	123	60	6.35 (5.96)	0.63



Scheme

Spectral Interpretation of (4a)

IR (ν_{\max}) (cm^{-1}): 3359 $\nu(\text{—OH})$; 2913 $\nu(\text{C—H})$; 1627 $\nu(\text{C=N})$; 1222 $\nu(\text{C—N})$; 1460 $\nu(\text{C=C})$; 1249 $\nu(\text{C—O})$.

NMR (CDCl_3) δ ppm: 2.3 (s, 3H, —CH_3); 3.2 (s, 1H, —CH); 6.9–7.6 (m, 13H, Ar—H); 10.3 (s, 1H, —OH).

Preparation of 1-(3-chlorophenyl)-3,5-diarylpyrazoles (5)

1,3-Diaryl-propane-1,3-dione (3) (0.01 M) was refluxed with 3-chlorophenyl hydrazine hydrochloride (0.02 M) for 6 h in pyridine solvent. The reaction mixture was decomposed with water containing a little HCl. The product obtained was filtered, washed with sufficient quantity of water and crystallised from ethanol and acetic acid mixture. The physical and analytical data of the compounds are given in Table-1.

Spectral Interpretation of (5a)

IR (ν_{\max}) (cm^{-1}): 3151 $\nu(\text{—OH})$; 2859 $\nu(\text{C—H})$; 1625 $\nu(\text{C=N})$; 1246 $\nu(\text{C—N})$; 1481 $\nu(\text{C=C})$; 1284 $\nu(\text{C—O})$.

NMR (CDCl_3) δ ppm: 2.3 (s, 3H, —CH_3); 3.7 (s, 1H, —CH); 6.8–7.4 (m, 12H, Ar—H); 10.4 (s, 1H, —OH).

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