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NOTE

Synthesis, Characterization and Microbial Activity of 2-Methyl-4-N-Cyanoethyl-N-Benzene-Sulphonyl Benzylidene Anils

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Synthesis of 2-methyl-4-N-cyanoethyl-N-benzene-sulphonyl benzylidene anils were carried out by refluxing 2-methyl-4-N-cyanoethyl-N-benzene-sulphonyl benzaldehyde and aniline in stoichiometric amounts dissolved in aqueous ethanol in presence of few drops of condensing agent. The products were characterized by elemental analysis and IR spectra. The antimicrobial screening of synthesized compounds was carried out.

Key Words: 2-Methyl-4-N-cyanoethyl-N-benzene sulphonyl benzylidene anils, Microcibial activity.

Schiff bases have gained importance because of their physiological and pharmacological activities such as anti-cancer[1], bacterial[2], tuberculostatic[3], diuretic and fungicidal[4]. They have been frequently employed for medicinal use. Looking to the interesting biological activities of Schiff bases, it seemed attractive and worthwhile to exploit the newly synthesized aldehyde for the preparation of Schiff bases which might act as improved carrier portions of the product.

All the chemicals used were of A.R. grade. Melting points were taken in open capillary and are uncorrected. IR spectra were recorded on Jasco FT-IR as KBr disks.

The 2-methyl-4-N-cyanoethyl-N-benzene-sulphonyl benzaldehyde (I) required for the synthesis was prepared in three steps. Monocyanoethylation of *m*-toluidine was carried out as reported in literature[5]. The product 3-(*m*-toluidine) propionitrile was converted into N-cyanoethyl-N-benzene-sulphonyl *m*-toluidine and formylation is carried out in DMF and $POCl_3$ (yield *ca.* 42%).

2-Methyl-4-N-cyanoethyl-N-benzene-sulphonyl benzylidene anil (II)

The aldehyde (I) (0.001 mol, 0.327 g) and amines (0.001 mol, 0.1 g) were refluxed for 2 h with few drops of sulphuric acid and 2 mL of aqueous ethanol. Solid products were separated. Recrystallization was done from absolute ethanol.

The reaction sequence involved can be shown as:

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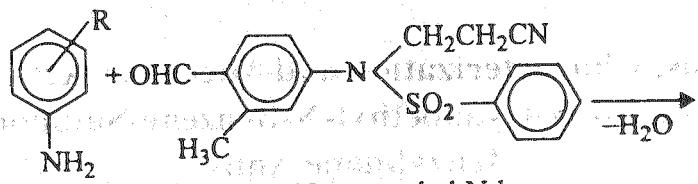
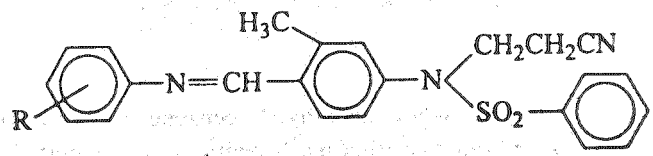


Aniline 2-Methyl-4-N-cyanoethyl-N-benzene-sulphonyl benzaldehyde

(I)



2-Methyl-4-N-cyanoethyl-N-benzene-sulphonyl benzylidene anil

(II)

TABLE-1
PHYSICO-CHEMICAL DATA OF COMPOUNDS (II a–d)

Compound No.	R	m.p. (°C)	Yield (%)	Colour	% N		m.f.
					Found	(Calcd.)	
II(a)	H	160	51.1	Pale yellow	10.01	(10.42)	$C_{23}H_{21}N_3O_2S$
II(b)	$CH_3(o)$	157	91.1	Pale yellow	9.70	(9.69)	$C_{24}H_{23}N_3O_2S$
II(c)	$CH_3(p)$	165	86.3	Pale yellow	9.65	(9.69)	$C_{24}H_{23}N_3O_2S$
II(d)	Cl(*p*)	156	87.0	White	9.60	(9.61)	$C_{23}H_{20}N_3O_2SCl$

All the four Schiff bass were white to pale yellow, shining, crystalline in form and recrystallized from absolute ethanol and gave satisfactory C, H, N and S analysis.

The IR spectra of all four Schiff bases showed the absorption bands (cm^{-1}) at 3431 ν(—NH) 2923–2858 ν(—CH_2), 2262 ν(CN), 1315 ν(ArC—N), 1345 ν(C—CH_3), 752 ν(C—Cl) and 1164 ν(S=O).

All the synthesized compounds were tested for their antibacterial activity against *Escherichia coli, Staphylococcus aureus, Klebsiella pneumoniae, B. proteus* and *B. pseudomonas*. The compounds were moderately sensitive against *S. aureus*.

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