3. RESULT AND DISCUSSION

Title compounds (4a-j) were obtained by refluxing indole and appropriate aldehyde or ketone in 2:1 ratio by scheme-1 as shown in Figure 1.

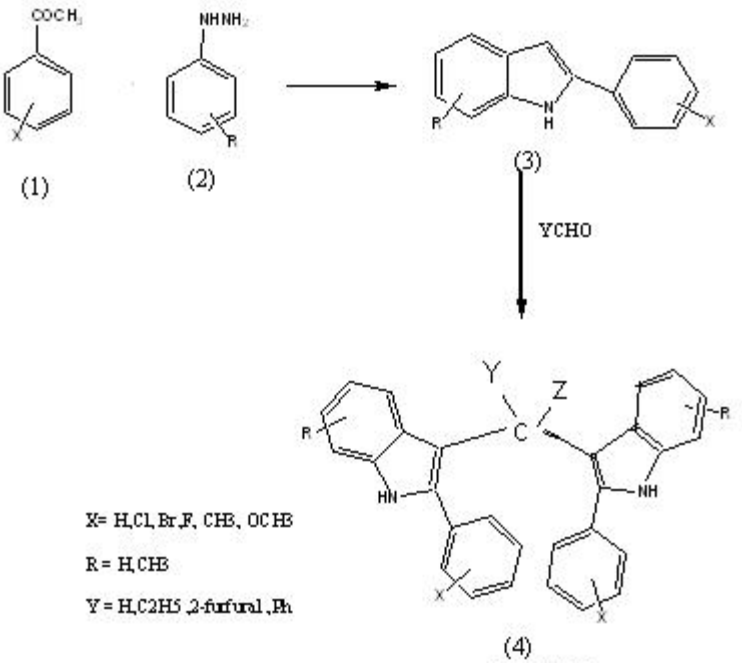

Fig. 1: Scheme-1 to prepare title compounds.

The IR spectra of title compounds (4a-j) showed strong >N-H absorption band from 3417-3400 cm^{-1} which was present earlier in compound (3) and aromatic C-H str. absorption peak appears at 3060-3051 cm^{-1}. Aliphatic C-H stretching Vibration is observed at 2839 cm^{-1} and aromatic C=C absorption band is observed at 1604 cm^{-1}. In their PMR all the diindolylmethanes exihibited disappearance of singlet from δ 6.4ppm assigned to methine proton (=C-H, at C-3) of the starting arylindole (3). Compound 4(a) showed additional resonance signal as double doublet from δ 4.02 - 4.52 ppm due to CH_2 protons indicatingthat they are nonequivalent protons. Aromatic proton (Ar-H) appears as a complex multiplet in the region of δ 6.8-7.76 ppm. Additional characteristic peaks corresponding to the formation of diindolylmethane were recorded in Table 2. Mass spectral data were also satisfactory and corresponded to their molecular weights as shown in Table 2.

Table 2: Spectral data of 2- phenyl indole (3) and diindolyl methan 4a,4c,4e,4f

Compd. No.	X	Y	1 R (KBr) $v_{max}cm^{-1}$	^{1}HNMR δ ppm	Mass m/z
3	H	-	3450–3350 (br, N,H), 1610 (C = C)	6.4(s,CH,1H),6.8- 8.0 (m,NH+ArH,10H)	193 (M+)
4a	F	H	3408(NHstr.), 3051 (aromatic C-H str.),2839 (aliphatic C-H str.) 1683(aromatic C=C str.), 1603(C = C str.Attached to N)	4.02-4.52(dd,CH_2,2H) ,6.80-7.47(m,ArH,16 H),7.76(s,NH,2H)	434 (M+)
4c	Br	Furfural	3412 (NH str), 3026 (aromatic C-H str.),2840 (aliphatic C-H str.)1685 (aromatic C=C str.), 1604(C=C str. Attached to N) 750 (C-Br str.)	6.26(s,CH,1H),6.78-7.75(m,ArH,21H), 8.26(s,NH,2H)	606 (M+2) peak
4e	F	C_6H_5	3408 (NH str.),3030 (aromatic C-H str.), 2832(aliphatic C-H str), 1690(aromatic C=C str), 1602(C=Cstr attached to N)	6.61(s,CH,1H),6.88-7.65(m,ArH,21H), 8.26(s,NH,2H)	511 (M+)
4f	OCH_3	C_6H_5	3415(NHstr.),3049 (aromatic C-H str.),2839 (aliphatic C-H str), 1683(aromatic C=C str.), 1602(C=C str. Attached to N)	6.04(s,CH,1H),6.86-7.36(m,ArH,21H), 7.92(s,NH,2H)	534 (M+)

3.1. Antibacterial Activities

Compounds (4a-j) were screened against gram negative bacteria Escherichia coli and gram positive bacteria klebsiella at different concentrations by disk diffusion method [15] as tabulated in Table 3. Compound (4c,4f,4h) showed activity greater than standard activity against E.Coli and klebsiella at 1000 ppm concentration.

Table 3: Antibacterial activity of 2-phenylindole (3) and diindolylalkane (4a-j)

Compd No.	Mean value of area of inhibition in mm (1000ppm)		Mean value of area of inhibition in mm (800ppm)		Mean value of area of inhibition in mm (400ppm)		Mean value of area of inhibition in mm (200ppm)	
	E.Coli	klebsiella	E.Coli	klebsiella	E.Coli	klebsiella	E.Coli	klebsiella
Amicacn	12	13	10	11	08	10	07	06
3	08	10	08	10	06	07		03
4a	06	12	04	08	01	02	nil	04
4b	10	14	06	10	04	04		02
4c	16	12	12	10	08	06	04	03
4d	09	10	10	08	-	06	-	01
4e	07	08	10	08		04	-	02
4f	14	12	10	09	18	16	-	03
4g	08	07	nil	02	06	nil	-	nil
4h	27	16	13	07	14	04	08	04
4i	11	12	10	14	06	-	04	-
4j	06	06	04	02	03	nil	02	nil

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