



Spectral Analysis:

3a: Tetra-*o*-acetyl- β -*D*-glucopyranosyl-5-*p*-tolyl-2-*s*-benzyl-2-isothiobiuret-

IR (KBr) cm-1: ν 3470 (NH), ν 3022-3682 (Ar-H), ν 1753 (C=O), ν 1637 (C=N), ν 1373 (C-N), ν 931 (char. of glucose), ν 761 (para subs.), ν 1515 (C=C). **¹HNMR (CDCl₃):** 7.36-7.12 (d, 2H, Ar-H), 6.54-6.3 (s, 1H, NH), 5.51-4 (m, 8H, glu.-H), 2.32-2.18 (m, 5H, CH₃), 2-1.97 (m, 16H, OAc), 1.6 (d, 2H, CH₃), 1.2 (s, 1H, NH) **FABMS:** m/z 689 (M⁺), 653, 503, 429, **¹³C NMR:** δ 20.62-21.05 (4 \times CH₃-CO), δ 29.89 (CH₃), δ 61.70-77.65 (C of glucose ring), δ 89.13 (C-S), δ 168.93 (C=O), δ 170.81 (C=N), δ 169.58, 169.84, 170.41 (Ph-C).

3b: Tetra-*o*-acetyl- β -*D*-glucopyranosyl-5-*m*-chloro -2-*s*-benzyl-2-isothiobiuret-

IR (KBr) cm-1: ν 3473 (NH), ν 3019 (Ar-H), ν 1752 (C=O), ν 1585.82 (C=N), ν 1215 (C-N), ν 929 (char. of glucose), ν 757 (para subs.), ν 1523 (C=C) **¹HNMR (CDCl₃):** 7.6-7.0 (m, 6H, Ar-H), 5.54-3.6 (m, 7H, glu.-H), 2.1-2 (m, 14H, OAc), 1.6 (d, 2H, CH₃), 1.2 (s, 1H, NH,) **FABMS:** m/z 689 (M⁺), 672, 649, 633, 536, 559, 478, 429 **¹³C NMR:** δ 20.64-21.05 (4 \times CH₃-CO), δ 29.91 (CH₃), 61.71-77.65 (C of glucose ring), δ 89.32 (C-S), δ 169.61 (C=O), δ 170.84 (C=N), δ 128.42-129.21 (Ph-C)

3c: Tetra-*o*-acetyl- β -*D*-glucopyranosyl-5-1- naphthyl -2-*s*-benzyl-2-isothiobiuret-

IR (KBr) cm-1: ν 3433 (NH), ν 3021-3684 (Ar-H), ν 1751 (C=O), ν 1511.38 (C=N), ν 1374 (C-N), ν 927 (char. of glucose), ν 760 (para subs.), ν 1586 (C=C). **¹HNMR (CDCl₃):** δ 7.9-7.0 (m, 12H, Ar-H), δ 5.34-3.5 (m, 9H, glu.-H), δ 2.1-1.6 (m, 14H, OAc), δ 1.2 (s, 1H, NH,) **FABMS:** m/z 652 (M⁺), 688, 666, 649, 559, 497, 351, 335. **¹³C NMR:** δ 20.44 (CH₃-CO),

61.62 -77.65 (C of glucose ring), 89.71 (C-S), 169.36 (C=O), 170.41 (C=N), 125.76-133.95 (Ph-C).

3d: Tetra-*o*-acetyl- β -*d*-glucopyranosyl-5-*o*-anisidyl -2-*s*-benzyl-2-isothiobiuret-

IR (KBr) cm⁻¹: ν 3426 (NH), ν 3020 (Ar-H) , ν 1751(C=O), ν 1636 (C=N) , ν 1376 (C-N), ν 925 (char. of glucose) , ν 1514 (C=C). **¹HNMR (CDCl₃):** δ 8.1-8.0 (d, 2H, NH) , δ 7.7-6.7 (m, 10H, Ar-H), δ 5.3-3.7(m, 11H, glu.-H) , δ 3.5-1.6 (m,12H , OAc), **FABMS:** *m/z* 688 (M⁺),684, 668, 646, 311, 295, **¹³C NMR:** δ 20.82 (CH₃-CO), δ 61.65 77.65(C of glucose ring), δ 82.11 (C-S), δ 169.55 (C=O), δ 170.84 (C=N), δ 110.09-136.61 (Ph-C).

TABLE 1: Physicochemical & analytical data of compounds (3a-3i):

Sr. No.	Product (IIIa-i)	Reactants (IIa-i)	Mol. wt.	M. pt. (OC)	Yield (%)	[α] _D CHCl ₃	Found (calcd.) N	S	Rf value
1	IIIa	-5- <i>p</i> -Tolyl-	629	235	89	150	6.67 (6.58)	5.0 (5.3)	0.93
2	IIIb	-5- <i>m</i> -Chloro-	649	200	91	-100	6.47 (6.42)	4.93 (5.1)	0.90
3	IIIc	-5- α - <i>Naphthyl</i> -	665	189	73	102	6.31 (6.28)	4.81 (4.9)	0.85
4	III d	-5- <i>o</i> -Anisyl- Phenyl-	645	169	81	143	6.51 (6.48)	4.96 (4.98)	0.94
5	IIIe	-5- <i>m</i> -Tolyl- Phenyl-	629	228	90	-108	6.51 (6.47)	5.1 (5.4)	0.86
6	III f	-5- <i>o</i> -Tolyl-	629	224	97	101	6.67 (6.64)	5.0 (5.6)	0.79
7	III g	-5- <i>p</i> -Chloro-	649	198	75	123	6.47 (6.43)	4.93 (4.96)	0.94
8	III h	-5- <i>m</i> -Anisyl-	645	174	86	158	6.50 (6.49)	4.96 (5.1)	0.88
9	III i	-5- <i>p</i> - Anisyl-	645	168	79	106	6.50 (6.47)	4.95 (4.97)	0.98

Antimicrobial activity:

Newly synthesized isothiobiurets were tested against following pathogenic microbes for their antibacterial and antifungal activities using cup plate agar diffusion method *Escherichia Coli*, *Staphalococcus aureus*, *Proteus vulgaris*, *Psudomonas aeruginosa*, *Bacillus cereus* in nutrient

agar medium and for antifungal activity against *Candida albicans* and *Aspergillus niger* in potato dextrose agar medium. The results of antimicrobial activities are also presented in **Table-2**.

Table 2: Antibacterial and Antifungal Activities of Compounds IIIa – i

Inhibition zone diameter in mm*							
Compounds	Bacteria					Fungi	
	<i>E. coli</i>	<i>P. vulgaris</i>	<i>S. aureus</i>	<i>P. aeruginosa</i>	<i>B. cereus</i>	<i>A. niger</i>	<i>C. albicans</i>
IIIa	18	15	20	12	16	21	17
IIIb	20	13	12	16	18	20	19
IIIc	16	15	15	17	18	19	16
III d	19	18	16	14	19	18	20
IIIe	22	17	14	18	16	15	19
III f	25	21	13	17	13	20	18
III g	16	14	15	14	19	18	20
III h	18	15	19	15	17	21	18
III i	23	14	18	16	14	20	20

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