THE SYNTHESIS OF SOME 2,4-DISUBSTITUTED 6*H*-5,1,3-BENZOTHIADIAZOCINES

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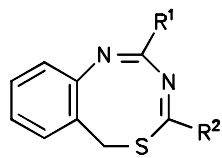
After psychotronic effects of 1,4-diazepines and diazocines have been found, the quest for novel active compounds led to the synthesis of analogues with various substitution patterns and different heteroatoms present in the ring[1].

We have found that similar compounds can be easily prepared from 2-chloromethyl imidoyl isothiocyanate[2]. On treatment of mentioned isothiocyanate with nitrogen, carbon or oxygen nucleophiles, at first an intermediate was formed followed by easy cyclization to the corresponding 6*H*-5,1,3-benzothiadiazocines *I–VIII* in good yields.



I – VIII

	R^1	R^2
I	C_6H_5	benzimidazol-1-yl
II	C_6H_5	1,2,4-triazol-1-yl
III	C_6H_5	benzotriazol-1-yl
IV	C_6H_5	OCH_3
V	C_6H_5	OC_6H_5
VI	C_6H_5	$CH(COOC_2H_5)_2$
VII	morpholin-4-yl	1,2,4-triazol-1-yl
VIII	morpholin-4-yl	benzotriazol-1-yl

EXPERIMENTAL

The ^{1}H NMR spectra ($CDCl_3$, tetramethylsilane as an internal standard) were recorded with Tesla BS 587 (80 MHz) spectrometer, mass spectra with MS 902 S spectrometer (AEI Manchester). Preparation of starting *N*-(2-chloromethylphenyl)benzimidoyl isothiocyanate and *N*-(2-chloromethylphenyl)-*N*′,*N*′-3-oxapentamethylene formamidinoyl isothiocyanate were reported in ref.[2].

2,4-Disubstituted 6*H*-5,1,3-Benzodiazocines *I–VIII*

To the acetonitrile (20 ml) solution of corresponding isothiocyanate (0.02 mol) the base (0.02 mol) (sodium salt of azole, methanolate, phenolate and diethyl malonate) was added and the reaction mixture was stirred for 12 h. The separated precipitate was filtered off and crystallized from methanol or hexane. The physico-chemical data of the prepared compounds are given in Table I, their spectral data in Table II.

TABLE I
Characteristic data of prepared compounds

Compound	Formula (M.w.)	M.p., °C Yield, %	Calculated/Found		
			% C	% H	% N
I	$C_{22}H_{16}N_4S$	180–182	71.72	4.38	15.21
	(368.5)	29	71.59	4.26	15.40
II	$C_{17}H_{13}N_5S$	206–207	63.93	4.10	21.93
	(319.4)	70	63.77	4.18	22.07
III	$C_{21}H_{15}N_5S$	190–191	68.27	4.09	18.96
	(369.5)	72	68.01	4.17	18.56
IV	$C_{16}H_{14}N_2OS$	127–128	68.06	5.00	9.92
	(282.4)	63	68.23	5.17	9.80
V	$C_{21}H_{16}N_2OS$	150–151	73.23	4.68	8.13
	(344.4)	26	73.12	4.55	8.21
VI	$C_{22}H_{22}N_2O_4S$	155–157	64.37	5.40	6.82
	(410.5)	68	64.21	5.30	6.73
VII	$C_{15}H_{16}N_6OS$	220–223	54.86	4.91	25.59
	(328.4)	43	54.77	4.80	25.44
VIII	$C_{19}H_{18}N_6OS$	225–227	60.30	4.79	22.21
	(378.5)	50	60.17	4.63	22.17

TABLE II
Spectral data of prepared compounds

Compound	*m/z* (M^+)	^{1}H NMR spectra (δ, ppm)			
		H-azole	H-arom.	H-6	H-aliph.
I	–	8. 56 s (1 H)	7.56–7.12 m (13 H)	4.69 d, 3.75 d (2 H)	–
II	–	8.86 s, 8.67 s, 7.97 s (2 H)	7.55–7.21 m (9 H)	4.71 d, 3.60 d (2 H)	–
III	369	–	8.20–7.11 m (13 H)	4.76 d, 3.65 d (2 H)	–
IV	282	–	8.10–7.10 m (9 H)	4.51 d, 3.10 d (2 H)	3.74 s (3 H)
V	344	–	7.85–6.89 m (14 H)	4.58 d, 3.41 d (2 H)	–
VI	410	–	8.10–7.18 m (9 H)	4.65 d, 4.45 d (2 H)	4.36–3.31 m, 1.44–1.10 m (11 H)
VII	–	8.73 s, 7.98 s (2 H)	7.95–6.95 m (4 H)	4.82 d, 4.66 d (2 H)	3.86–3.52 m (8 H)[a]
VIII	–	–	8.14–7.00 m (8 H)	4.84 d, 4.60 d (2 H)	3.79–3.50 m (8 H)[a]

[a] Morpholine.

REFERENCES

1. Richter P., Morgenstern O.: Pharmazie *39*, 301 (1984).
2. Bodajla M., Stankovsky S., Jantova S., Hudecova D., Spirkova K.: Chem. Papers, in press.