3-AMINOSELENOPHENO[2,3-b]PYRIDINES

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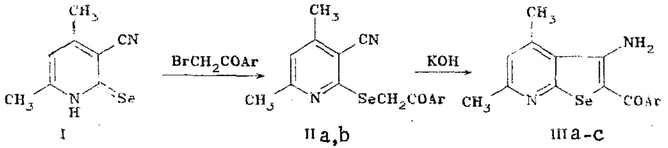
One of the principal methods for the preparation of 3-aminothieno[2,3-b]-pyridines is alkylation of 3-cyanopyridine-2(1H)-thiones with halides that contain an active methylene group [1].

Up until now, data on their selenium-containing analogs has not been available in the literature. For the first time we have established that the alkylation of 4,6-dimethyl-3-cyanopyridine-2(1H)-selenone (I) with phenacyl bromides in DMF in the presence of an equimolar amount of an aqueous solution of KOH proceeds selectively to give 4,6-dimethyl-3-cyano-2-phenacylselenopyridines (II).



II a Ar=C_6H_5, b Ar=4-ClC_6H_4; III a Ar=C_6H_5, b Ar=4-ClC_6H_4, c Ar=4-FC_6H_4

Subsequent cyclization of nitriles IIa,b in DMF in the presence of bases leads to 3-amino-2-aroyl-4,6-dimethylselenopheno[2,3-b]pyridines (IIIa,b). In addition, the compounds were obtained in 75-78% yields without isolation of nitriles II by reaction of pyridineselenones I with phenacyl bromides in DMF in the presence of excess KOH solution.

Compound IIa, with mp 134-135°C (from ethanol), was obtained in 73% yield. UV spectrum (in ethanol), λ_{max} (log ε): 232 (4.42), 250 (4.30), 275 (4.18), and 312 nm (3.78). IR spectrum (KBr): 2220 (CN) and 1690 cm^{-1} (CO). PMR spectrum (d_6-DMSO): 2.25 (s, CH_3), 2.36 (s, CH_3), 4.75 (s, CH_2), 7.05 (s, 5-H), and 7.70 ppm (m, C_6H_5). Compound IIb, with mp 117-118°C (from ethanol), was obtained in 78% yield. UV spectrum (in ethanol), λ_{max} (log ε): 237 (4.43), 254 (4.37), 268 (4.19), and 314 nm (3.79). IR spectrum (KBr): 2224 (CN) and 1693 cm^{-1} (CO). PMR spectrum (d_6-DMSO): 2.27 (s, CH), 2.38 (s, CH_3), 2.47 (s, CH_2), 7.06 (s, 5-H), and 7.74 ppm (m, C_6H_4). Compound IIIa, with mp 155-156°C (from ethanol), was obtained in 81% yield. UV spectrum (in ethanol), λ_{max} (log ε): 210 (4.38), 230 (4.09), 245 (4.00), 290 (4.54), and 375 nm (3.89). IR spectrum (KBr): 3497, 3370, 3260 (NH_2); 1595 cm^{-1} (νCO, δNH_2). PMR spectrum (d_6-DMSO): 2.48 (s, CH_3), 2.73 (s, CH_3), 7.01 (s, 5-H), 7.4-7.7 (m, $2C_6H_5$), and 8.15 ppm (s, NH_2). Compound IIIb, with mp 196°C (from ethanol), was obtained in 87% yield. UV spectrum (in ethanol), λ_{max} (log ε): 212 (4.40), 235 (4.11), 241 (4.02), 296 (4.62), and 375 nm (3.95). IR spectrum (KBr): 3500, 3270 (NH_2); 1590 cm^{-1} (νCO, δNH_2). PMR spectrum (d_6-DMSO): 2.48 (s, CH_3), 2.73 (s, CH_3), 7.04 (s, 5-H), 7.55 and 7.69 (d, J = 5.9 Hz, C_6H_4), and 8.21 ppm (s, NH_2). Compound IIIc, with mp 179-180°C (from ethanol), was obtained in 75% yield. UV spectrum (in ethanol), λ_{max} (log ε): 235 (4.05), 248 (4.00), 278 (4.50), and 378 nm (3.95). IR spectrum (KBr): 3488, 3250 (NH_2); 1595 cm^{-1} (νCO and δNH_2). PMR spectrum (d_6-DMSO): 2.48 (s, CH_3). 2.72 (s, CH_3), 7.07 (s, 5-H), 7.1-7.8 (m, C_6H_5, C_6H_4), and 8.19 ppm (s, NH_2).

LITERATURE CITED

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