2-ARYL-4H-NAPHTHO[2',3':4,5]THIENO+-[2,3-*d*][1,3]OXAZINE-4,5,10-TRIONES

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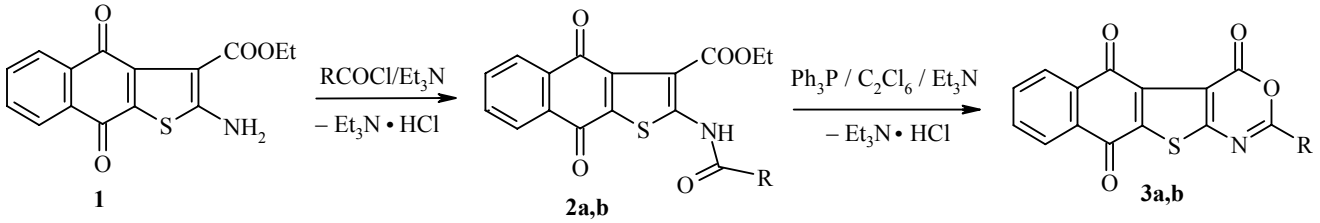
The synthetic potential of 2-amino-3-ethoxycarbonylnaphtho[2,3-*b*]thiophene-4,9-dione (**1**) has been little studied until now [1, 2]. We have carried out the reaction of dione **1** with equimolar quantities of aroyl chlorides in dioxane in the presence of triethylamine (70-80°C, 5 h) and have obtained 2-aroylamino-3-ethoxy-carbonylnaphtho[2,3-*b*]thiophene-4,9-diones **2a,b**. Reaction of compounds **2a,b** with dichlorotriphenyl-phosphorane in the presence of triethylamine in toluene gave the previously undescribed 2-aryl-4H-naphtho[2',3':4,5]thieno[2,3-*d*][1,3]oxazine-4,5,10-triones **3a,b** in yields of 74-78%.



1 **2a,b** **3a,b**

a R = *n*-ClC_6H_4; **b** R = *n*-MeC_6H_4

^{1}H NMR spectra of DMSO-d_6 solutions with TMS as internal standard were recorded with a Bruker MSL-400 (400 MHz) spectrometer at 25°C.

2-(4-Chlorobenzoylamino)-3-ethoxycarbonylnaphtho[2,3-*b*]thiophene-4,9-dione (2a). Yield 61%; mp 184-185°C. ^{1}H NMR spectrum, δ, ppm (*J*, Hz): 7.82-7.77 (2H, dd, *J* = 0.4, *J* = 7.3, CH_{arom}); 8.23-8.09 (2H, m, CH_{arom}); 3.30 (1H, s, NH); 7.37-7.82 (4H, dd, *J* = 2.3, *J* = 2.1, CH_{arom}); 4.24-4.30 (2H, q, *J* = 7, CH_2); 1.35 (3H, t, *J* = 2.9, CH_3). Found, %: C 59.95; H 2.99; Cl 8.00; N 3.25; S 7.38. $C_{22}H_{14}ClNSO_5$. Calculated, %: C 60.07; H 3.21; Cl 8.06; N 3.18; S 7.29.

2-(4-Methylbenzoylamino)-3-ethoxycarbonylnaphtho[2,3-*b*]thiophene-4,9-dione (2b). Yield 64%; mp 180-181°C. ^{1}H NMR spectrum, δ, ppm (*J*, Hz): 7.81-7.75 (2H, m, CH_{arom}); 8.21-8.08 (2H, dd, *J* = 7.3, *J* = 0.4, CH_{arom}); 3.30 (1H, s, NH); 7.30 (2H, d, *J* = 2.3, CH_{arom}); 7.03 (2H, d, *J* = 2.2, CH_{arom}); 4.24-4.30 (2H, q, *J* = 6.9, CH_2); 2.35 (3H, s, CH_3); 1.35 (3H, t, *J* = 2.8, CH_3). Found, %: C 65.97; H 4.15; N 3.20; S 7.38. $C_{23}H_{17}NSO_5$. Calculated, %: C 65.86; H 4.09; N 3.34; S 7.64.

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2-(4-Chlorophenyl)-4H-naphtho[2',3':4,5]thieno[2,3-*d*][1,3]oxazine-4,5,10-trione (3a). Yield 74%; mp 292-293°C. ^{1}H NMR spectrum, δ, ppm (*J*, Hz): 8.14-7.75 (2H, m, CH_{arom}); 8.47-8.41 (2H, t, *J* = 7.5, CH_{arom}); 7.46 (2H, d, *J* = 2.1, CH_{arom}); 8.03 (2H, d, *J* = 3.3, CH_{arom}). Found, %: C 59.94; H 2.10; Cl 8.90; N 3.61; S 8.21. $C_{21}H_{11}NO_4S$. Calculated, %: C 61.00; H 2.05; Cl 9.00; N 3.56; S 8.14.

2-(4-Methylphenyl)-4H-naphtho[2',3':4,5]thieno[2,3-*d*][1,3]oxazine-4,5,10-trione (3b). Yield 75%; mp 292-293°C. ^{1}H NMR spectrum, δ, ppm (*J*, Hz): 8.16-7.74 (2H, t, *J* = 7.5, CH_{arom}); 8.47-8.41 (3H, m, CH_{arom}); 7.21 (2H, d, *J* = 3.3, CH_{arom}); 8.23 (2H, d, *J* = 2.2, CH_{arom}); 2.39 (3H, s, CH_3). Found, %: C 67.71; H 3.02; N 7.02; S 8.40. $C_{21}H_{11}NSO_4$. Calculated, %: C 67.55; H 2.97; N 3.75; S 8.59.

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