REACTION OF N-ACYLISOQUINOLINIUM SALTS WITH PYRROLES

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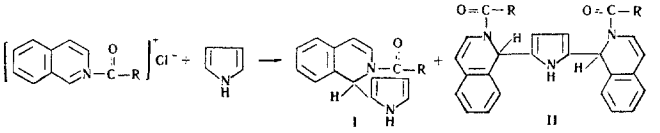
The reaction of isoquinoline with pyrroles in the presence of acyl halides gives products of the addition of the N-acylisoquinolinium cation formed as an intermediate to the pyrrole, as is the case in the reactions of N-acylpyridinium [1] and quinolinium [2] salts with pyrrole and indole [3]:



I II

The reaction took place smoothly at 20–50° C in an atmosphere of nitrogen. Compounds I and II (ratio 3 : 4), obtained in a yield of 50–70%, were separated by fractional crystallization from ether (II being the less soluble) or by means of preparative chromatography on alumina in the solvent system benzene–hexane–chloroform (6 : 1 : 30), II being the less mobile. In this way we obtained:

2-Benzoyl-1-(pyrrol-2'-yl)-1,2-dihydroisoquinoline, mp 136–137° C, R_f 0.68, λ_{max} 235 nm, log ε 4.85; 265 mm, log ε 4.83. Found, %: C 80.01, 80.49; H 5.65, 5.73; N 8.72, 9.25. Calculated for $C_{20}H_{16}N_2O$, %: C 79.98; H 5.37; N 9.33.

2,5-Di(2'-benzoyl-1',2'-dihydroisoquinol-1'-yl)pyrrole (II), mp 197–198° C, R_f 0.52; λ_{max} 235 nm, log ε 5.27; 275 nm, log ε 5.40. Found, %: C 80.82, 81.29; H 5.25, 5.20; N 7.73, 7.94. Calculated for $C_{36}H_{27}N_3O_2$, %: C 81.02; H 5.09; N 7.87.

2-Furoyl-1-(pyrrol-2'-yl)-1,2-dihydroisoquinoline, mp 125–126° C, R_f 0.45, λ_{max} 235 nm, log ε 4.27; 260 nm, log ε 4.23; 315 nm, log ε 4.19. Found, %: C 74.78, 74.67; H 5.03, 5.01; N 9.78, 9.86. Calculated for $C_{18}H_{14}N_2O_2$, %: C 74.47; H 4.86; N 9.65.

2,5-Di(2'-furoyl-1',2'-dihydroisoquinol-1'-yl)pyrrole, mp 170–171° C, R_f 0.18, λ_{max} 235 nm, log ε 4.49; 265 nm, log ε 4.55; 315 nm, log ε 4.50. Found, %: C 74.10, 74.61; H 4.89, 4.61; N 8.19, 8.42. Calculated for $C_{32}H_{23}N_3O_4$ %: C 74.84; H 4.51; N 8.18.

The reaction with N-phenylpyrrole formed only one compound—**1-(N-phenylpyrrol-2-yl)-1,2-dihydroisoquinoline**, yield 88%, mp 149–150° C (from ethanol), R_f 0.63, λ_{max} 300 nm, log ε 4.11. Found, %: C 82.83, 83.17; H 5.46, 5.38; N 7.33, 7.70. Calculated for $C_{26}H_{20}N_2O$, %: C 82.95; H 5.35; N 7.44.

The reaction with 2,5-dimethyl-1-phenylpyrrole gave **3-(2'-benzoyl-1',2'-dihydroisoquinol-1'-yl)-2,5-dimethyl-1-phenylpyrrole**, yield 67%, mp 242–243° C, R_f 0.66. Found, %: C 82.98, 83.08; H 5.77, 5.86; N 6.68, 6.87. Calculated for $C_{28}H_{24}N_2O$, %: C 83.14; H 5.98; N 6.92.

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