METHOD FOR THE PREPARATION OF PYRANO[2,3-b]INDOLIUM COMPOUNDS

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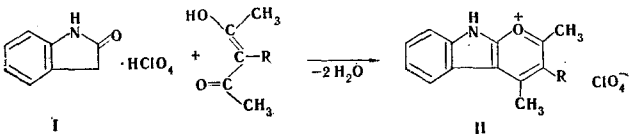
UDC 547.816'759.3

It was recently shown [1] that 2-ketoindoline reacts with formyl ketones in alcoholic HCl solution to give pyrano[2,3-b]indolium derivatives. We have found that β-diketones also enter into this synthesis if they are condensed with 2-ketoindoline perchlorate:



I II

The reaction products (II) give polymethine dyes, for example, when they are heated with p-dimethylaminobenzaldehyde in acetic anhydride.

EXPERIMENTAL

2,3-Dimethylpyrano[2,3-b]indolium Perchlorate (II, R = H). This compound was obtained by heating 0.5 g (2.1 mmole) of I with 0.4 ml (4 mmole) of acetylacetone for a few minutes at 140°C. The mixture was cooled, and the solidified mass was triturated with ether and filtered to give 0.43 g (67%) of light-yellow needles with mp 260-261° (with decomposition, from methanol). PMR spectrum (in CF_3COOH, with respect to hexamethyldisiloxane in ppm): 2.48 (4-CH_3), 2.67 (2-CH_3), 6.87 (3-H), 7.0-7.35 (three phenylene protons, multiplet), 7.70 (one phenylene proton, multiplet). Found: Cl 11.9; N 4.6%. $C_{13}H_{12}ClNO_5$. Calculated: Cl 11.9; N 4.7%.

2,4-Dimethyl-3-ethylpyrano[2,3-b]indolium Perchlorate (II, R = C_2H_5). This compound was similarly obtained from I and 3-ethylacetylacetone in 36% yield; mp 197-199° (from methanol). Found: Cl 10.9; N 4.3%. $C_{15}H_{16}ClNO_5$. Calculated: Cl 10.9; N 4.3%.

LITERATURE CITED

1. G. I. Zhungietu, B. P. Sukhanyuk, and F. N. Chukhrii, in: Chemistry and Pharmacology of Indole Compounds [in Russian], Kishinev (1971), p. 33.

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