INTRODUCING A QUINOLINE GROUP INTO THE BENZENE RING OF 1-ALKYL-2, 3-DIHYDROINDOLES

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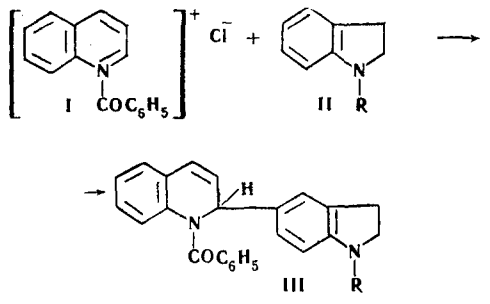
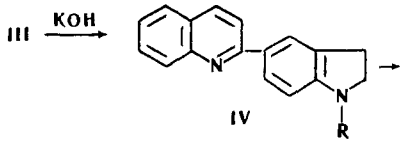
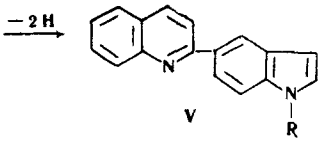
When 1-acylquinolinium salts react with an indole, the quinoline portion enters the pyrrole ring of the indole [1]. To prepare quinolylindoles, substituted in the benzene ring, we made use of our previously described method of preparing pyridylindoles by reacting 1-acylpyridinium salts with 1-alkylinolines [2]. It was found that by this method a quinoline group can be introduced into the benzene ring of 1-alkyl-2, 3-dihydroindoles (II), but that with 1-acylquinolinium salts the reaction proceeds without a catalyst, stopping at the state of formation of 1, 2-dihydroquinolines:



The resultant 1-alkyl-5-(1'-benzoyl-1', 2'-dihydroquinolyl-2')-1, 2-dihydroindoles (III), were smoothly hydrolyzed by alkali to give high yields of 1-alkyl-5-(quinolyl-2')-1, 2-dihydroindoles (IV), from which 5-(quinolyl-2')indoles (V) could be obtained by the usual methods of dehydrogenation.





The UV and IR spectra of all the type III compounds were similar to the spectra of 1-benzoyl-2-p-dialkylaminophenyl-1, 2-dihydroquinolines, which indicates the presence of a quinoline group para to the amino group, and confirms structure III.

By reacting quinoline, benzoyl chloride, and II (2: 1: 1) at 100° for 5 hr, we obtained 1-methyl-5-(1'-benzoyl-1', 2'-dihydroquinolyl-2')-1, 2-dihydroindole (**III**, R = Me), in 57% yield, snow-white crystals, mp 116–117° (ex petrol ether), R_f 0.36 (on alumina, using benzene: hexane: $CHCl_3$ 6: 1: 30), λ_{max}, 265 mμ, ε 17356 (in EtOH). Found: C 81.69; 81.77; H 6.09; 6.11; N 7.37; 7.45%. Calculated for $C_{25}H_{22}N_2O$. C 81.94; H 6.01; N 7.65%.

1-Ethyl-5-(1'-benzoyl-1', 2'-dihydroquinolyl-2')-1, 2-dihydroindole (**III**, R=C_2H_5) was prepared similarly, yield 53%, mp 128–130°. Found: C 81.86; 81.91; H 6.60; 6.41; N 7.52; 7.47%. Calculated for $C_{26}H_{24}N_2O$. C 82.11; H 6.32; N 7.37%.

Hydrolysis gave 1-ethyl-5-(quinolyl-2')-1, 2-dihydroindole (**IV**, R=C_2H_5), mp 122–123°; picrate mp 193–194° (ex EtOH). Found: N 13.67; 13.81%. Calculated for $C_{19}H_{18}N_2 \cdot C_6H_3N_3O_7$. N 13.91%.

REFERENCES

1. H. Dobeneck and W. Goltzsche, Chem. Ber., **95**, 1484, 1962.

2. A. N. Kost, A. K. Sheinkman, and N. F. Kazarinova, KhGS [Chemistry of Heterocyclic Compounds], 722, 1966.

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2, 2'-AZOBENZIMIDAZOLES

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Unlike the recently described symmetrical 2, 2'-azoimidazoles [1], their benzimidazoles (II) have hitherto not been known. We have now prepared the first representatives of this class of compound. The starting materials were the readily accessible N-substituted 2-aminoben-

2, 2'-Azobenzimidazoles (II)

R	Mp, °C	Solvent for crystallizing	Formula	Found, %			Calculated, %			Yield, %
				C	H	N	C	H	N	
CH_3	289–290	EtOH	$C_{16}H_{14}N_6$	65.85	4.86	29.00	66.19	4.86	28.95	20
C_2H_5	197	EtOAc	$C_{18}H_{18}N_6$	68.21	5.95	26.66	67.90	5.70	26.40	17
$C_6H_5CH_2$	279–280	$CHCl_3$-petrol ether	$C_{28}H_{22}N_6$	75.56	5.29	18.96	75.99	5.01	19.00	36
C_6H_5	260	BuOH	$C_{26}H_{18}N_6$	75.02	4.26	20.23	75.32	4.38	20.30	72