QUINO(4)CYANINES WITH A DIPHENYLPHOSPHONYL SUBSTITUENT

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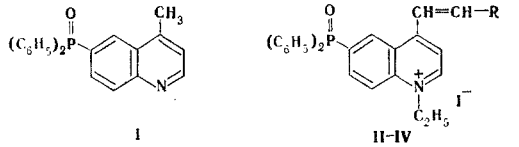
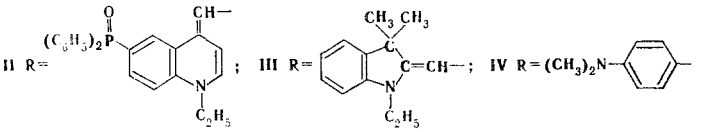
Quino(4)cyanines with acceptor substituents have recently become of interest in connection with prospects for their practical application [1, 2]. Phosphorus-containing groups are of particular interest as substituents of this sort both from a theoretical point of view and as a consequence of their ability to activate sensitization. On the basis of 6-diphenylphosphonyllepidine (I) ethyltosylate we have obtained phosphorus-containing dyes II-IV – the first representatives of cyanine dyes with a phosphorus–heteroring bond. Lepidine I is formed by the reaction of p-diphenylphosphonylaniline [3] with vinyl methyl ketone.



I

II-IV



II R= ; III R= ; IV R=

Compound I, with mp 184°C (from octane), was obtained in 34% yield; δ [in $(CD_3)_2CO$] 2.70 ppm (CH_3). The UV spectra of dyes II-IV in ethanol contained the following bands [λ_{max}, nm ($\varepsilon \cdot 10^{-4}$)]: 734 (20.2), 634 (11.1), and 596 (4.6), respectively. Thus diphenylphosphonyl groups give rise to somewhat greater bathochromic shifts of the absorption maxima than SCF_3 [1].

The elementary compositions of the compounds were in agreement with the calculated values.

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