ONIUM DERIVATIVES OF 1,2-DIPHENYLPYRAZOLIDINE-3,5-DIONE

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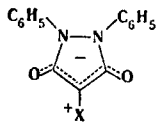
By reaction of equimolar amounts of 1,2-diphenylpyrazolidine-3,5-dione and phenyliodoso diacetate in alkaline ethanol solution we obtained 1,2-diphenyl-4-phenyliodoniapyrazolidine-3,5-dione betaine (I) in almost quantitative yield; the product was a colorless crystalline substance with mp 167-168°C (dec.) that is stable during storage.



I, II a-d

I X=IC_6H_5, II a X= pyridina, b X=isoquinolinia, c X=4-cyanopyridina, d X=$S(CH_3)_2$

1,2-Diphenyl-4-pyridiniapyrazolidine-3,5-dione betaine (IIa, mp 249-250°C) or 1,2-diphenyl-4-isoquinoliniapyrazolidine-3,5-dione betaine (IIb, mp 235-237°C) is formed when betaine I is heated in pyridine or isoquinoline with the addition of catalytic amounts of TsOH. 1,2-Diphenyl-4-(4-cyanopyridinia)pyrazolidine-3,5-dione betaine (IIc, mp 320-324°C) and the previously described 1,2-diphenyl-4-dimethylsulfoniapyrazolidine-3,5-dione betaine (IId, mp 211-213°C) were obtained by a similar reaction with 4-cyanopyridine and dimethyl sulfide in ethanol solution. The results of elementary analysis of all of the compounds are in agreement with the calculated values.

An unusually intense absorption band in the long-wave region due to intramolecular charge transfer from the anionic to the onium part of the molecule is observed in the UV spectra of betaines IIa-c. This band displays solvatochromism: EtOH, λ_{max} (ε): IIa 373 (16600), IIb 405 (17600), and IIc 428 (30400); $CHCl_3$: IIa 387 (23000), IIb 422 (22760), and IIc 448 nm (39000). Up until now, such an intense absorption band has been observed only in the case of onium derivatives of indan-1,3-dione [1].

LITERATURE CITED

1. V. É. Kampar and O. Ya. Neiland, in: Structures and Tautomeric Transformations of β-Dicarbonyl Compounds [in Russian], Zinatne, Riga (1977), p. 225.

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