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SHORT COMMUNICATIONS

Recyclization of 4,5-Diaroyl-Substituted 1*H*-Pyrrole-2,3-diones Effected by Benzylhydrazine

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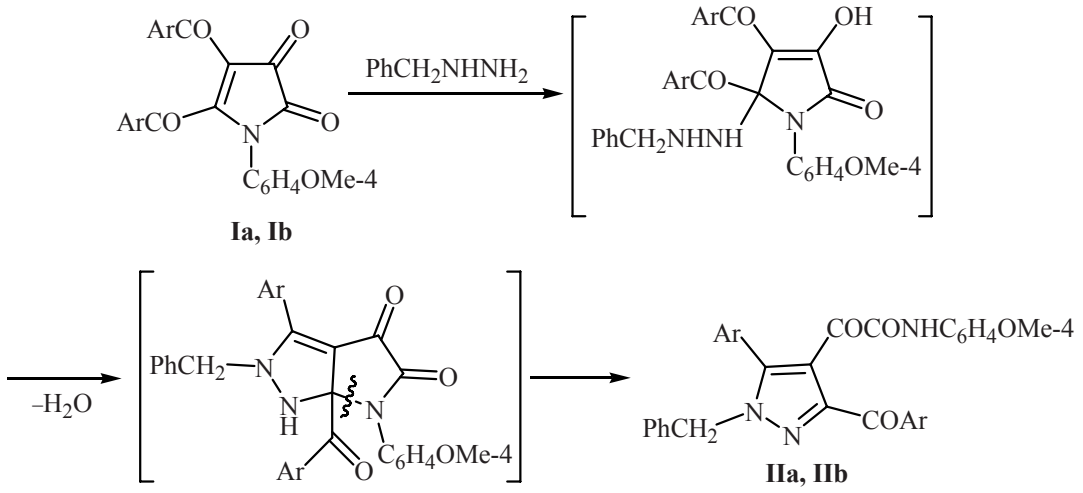
The reactions of 4,5-diaroyl-substituted 1*H*-pyrrole-2,3-diones with hydrazine derivatives were not reported.

In reaction of 4,5-diaroyl-(4-methoxyphenyl)-1*H*-pyrrole-2,3-diones **Ia** and **Ib** with benzylhydrazine in equimolar ratio performed by maintaining the reagents solution in anhydrous chloroform at room temperature for 15–20 min we obtained in good yields 2-(5-aryl-3-aroyl-1-benzyl-1*H*-pyrazol-4-yl)-2-oxoacetic acids *N*-(4-methoxyphenyl)amides **IIa** and **IIb** whose structure was proved by XRD analysis.

The formation of compounds **IIa** and **IIb** occurred presumably by successive nucleophilic attacks of the primary and secondary amino groups of the benzylhydrazine on the carbon atoms in the position *5* and of the keto carbonyl of the aroyl substituent in the position *4* of pyrrolediones **Ia** and **Ib** involving the cleavage of the pyrroledione ring at the N^1–C^5 bond.

This reaction is an example of a recyclization of pyrrolediones under the action of hydrazines, namely, the cleavage of the pyrroledione ring followed by the formation of a pyrazole ring.

2-(1-Benzyl-3-benzoyl-5-phenyl-1*H*-pyrazol-4-yl)-2-oxoacetic acid N-(4-methoxyphenyl)amide (IIa). To a solution of 1.0 mmol of compound **Ia** in 10 ml of anhydrous chloroform was added a solution of 1.0 mmol of benzylhydrazine in 5 ml of anhydrous chloroform. The mixture was kept at room temperature for 20 min, the separated precipitate was filtered off. Yield 76%, mp 177–178°C (from ethanol). IR spectrum, ν, cm^{-1}: 3344 (NH), 1683, 1643 (CO). ^{1}H NMR spectrum,



Ar = Ph (**a**), C_6H_4Me-4 (**b**).

δ, ppm: 3.70 s (3H, OMe), 5.41 s (2H, CH_2Ph), 6.84–8.11 group of signals (19H, 3Ph + C_6H_4), 10.52 s (1H, NH). Found, %: C 74.48; H 4.86; N 8.07. $C_{32}H_{25}N_3O_4$. Calculated, %: C 74.55; H 4.89; N 8.15.

2-[1-Benzyl-3-(4-methylbenzoyl)-5-(4-methylphenyl)-1*H*-pyrazol-4-yl]-2-oxoacetic acid *N*-(4-methoxyphenyl)amide (IIb) was similarly obtained. Yield 82%, mp 168–169°C (from ethanol). IR spectrum, cm^{-1}: 3346 (NH), 1683, 1643 (CO). ^{1}H NMR spectrum, δ, ppm: 2.35 s (3H, Me), 2.40 s (3H, Me), 3.70 s (3H, OMe), 5.38 s (2H, CH_2Ph), 6.85–8.01 group of signals (17H, Ph + $3C_6H_4$), 10.48 s (1H, NH). Found, %: C 75.07; H 5.34; N 7.66. $C_{34}H_{29}N_3O_4$. Calculated, %: C 75.12; H 5.38; N 7.73.

IR spectra of compounds obtained were recorded on a spectrophotometer FSM-1201 from mulls in mineral oil. ^{1}H NMR spectra were registered on a spectrometer Bruker AM-400 (operating frequency 400 MHz) in DMSO-d_6, internal reference TMS. The homogeneity of compounds obtained was proved by TLC on Silufol plates, eluents benzene–ethyl acetate, 5:1, ethyl acetate.

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