

SHORT
COMMUNICATIONS

Regioselective Reduction of 1*H*-Pyrrole-2,3-diones with Thioacetamide

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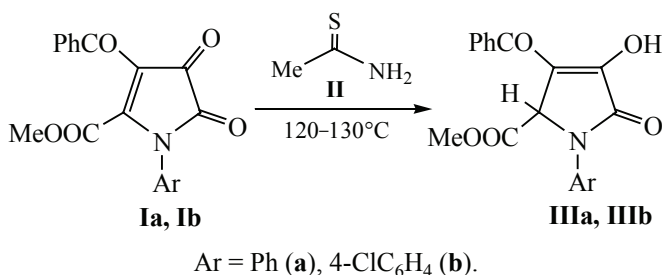
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The addition of primary amines to carbon atoms in the positions 2 and 5 of 1-aryl-4-aryl-5-methoxycarbonyl-1*H*-pyrrole-2,3-diones is described [1, 2]; the reactions of these pyrrolediones with amides and thioamides are not studied.

On melting 1-aryl-4-benzoyl-5-methoxycarbonyl-1*H*-pyrrole-2,3-diones **Ia**, **Ib** with thioacetamide (**II**) we obtained 1-aryl-4-benzoyl-3-hydroxy-5-methoxycarbonyl-2,5-dihydro-1*H*-pyrrol-2-ones **IIIa**, **IIIb**.

The spectral characteristics of compounds **IIIa**, **IIIb** are very similar to those of the known substituted 3-hydroxy-2,5-dihydro-1*H*-pyrrol-2-ones [2].



Apparently at the attack of thioacetamide on 1*H*-pyrrole-2,3-diones **Ia**, **Ib** a regioselective reduction occurs of the double bond of the dihydropyrrole ring resulting in the formation of the tetrahydropyrrole-2,3-diones **IIIa**, **IIIb** existing in the enol form.

The described reaction is a new way of the regioselective reduction of the substituted 1*H*-pyrrole-2,3-diones.

4-Benzoyl-3-hydroxy-5-methoxycarbonyl-1-phenyl-2,5-dihydro-1*H*-pyrrol-2-one (IIIa). A mixture of 1 mmol of compound **Ia** and 1 mmol of thioacetamide (**II**) was melted at 120–130°C for 30 min, and cooled. Yield 56%, mp 226–227°C (from methanol). IR spectrum, cm⁻¹: 3400 br, 3150 br (OH), 1723 (COOMe, C²=O), 1624 (COPh). ¹H NMR spectrum, δ, ppm: 3.57 s (3H,

OMe), 5.84 s (1H, H⁵), 7.26–7.80 group of signals (10H, 2Ph), 12.43 br.s (1H, OH). Found, %: C 67.69; H 4.46; N 4.12. C₁₉H₁₅NO₅. Calculated, %: C 67.65; H 4.48; N 4.15.

4-Benzoyl-3-hydroxy-5-methoxycarbonyl-1-(4-chlorophenyl)-2,5-dihydro-1*H*-pyrrol-2-one (IIIb). Yield 63%, mp 245–247°C (from methanol). IR spectrum, cm⁻¹: 3410 br, 3160 br (OH), 1723 (COOMe, C²=O), 1622 (COPh). ¹H NMR spectrum, δ, ppm: 3.58 s (3H, OMe), 5.87 s (1H, H⁵), 7.50–7.79 group of signals (9H, Ph + C₆H₄), 12.10 br.s (1H, OH). Found, %: C 61.42; H 3.76; Cl 9.52; N 3.80. C₁₉H₁₄ClNO₅. Calculated, %: C 61.38; H 3.80; Cl 9.54; N 3.77.

IR spectra of compounds obtained were recorded on a spectrophotometer FMS-1201 from mulls in mineral oil. ¹H NMR spectra were registered on a spectrometer Bruker WP-400 in DMSO-*d*₆, internal reference TMS. The homogeneity of compounds obtained was proved by TLC on Silufol plates, eluent ethyl acetate, development in iodine vapor.

ACKNOWLEDGMENTS

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