

SHORT  
COMMUNICATIONS

## Heterocyclization of *N*-Phenylanthranlylamide Effected by Aroyl Ketenes

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Carboxamides react with aroyl ketenes generated by thermal decarbonylation of 5-aryl-2,3-dihydro-2,3-furandiones to afford the corresponding *N*-aroylacetyl derivatives [1, 2]. Performing the reaction between *N*-phenylanthranlylamide and 5-aryl-2,3-dihydro-2,3-furandiones **Ia–Ic** under conditions of the thermal decarbonylation of the latter we unexpectedly obtained (*E*)-2-aroylmethylene-1-phenyl-1,2,3,4-tetrahydroquinazolin-4-ones **IIa–IIc**. The spectral characteristics of quinazolinones **IIa–IIc** showed that both in the crystalline state and in solutions the compounds exist as *E*-isomers with a strong intramolecular hydrogen bond of an H-chelate type between the N<sup>3</sup>-H group and the carbonyl in the side chain.

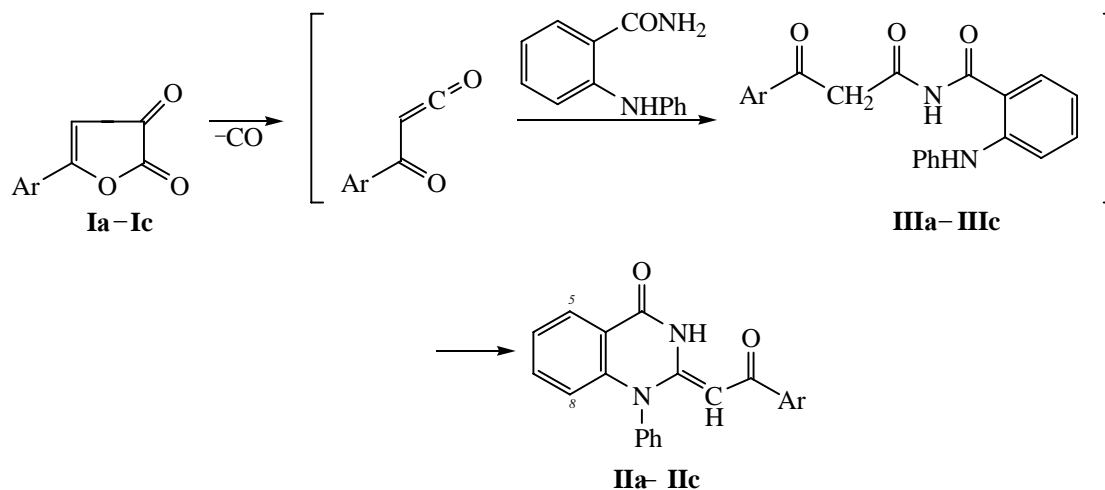
Apparently in the first stage of the reaction occurring along the scheme similar to the above described inter-

mediately form *N*-aroylacetyl derivatives **IIIa–IIIc** suffering dehydration under the existing reaction conditions. The relatively low yield of compounds **IIa–IIc** may be due to the reaction of water eliminated during this dehydration with one of the reagents, furandione **Ia–Ic** (see Scheme).

This reaction is a convenient one-stage preparative method for representatives of a hard-to-obtain class of heterocyclic enaminoketones.

**(E)-2-Phenacylidene-1-phenyl-1,2,3,4-tetrahydroquinazolin-4-one (IIa)**. A solution of 10 mmol of 5-diketone **Ia** and 10 mmol of *N*-phenylanthranlylamide in 25 ml of anhydrous benzene was boiled for 3 h, then cooled, the solvent was distilled off till the solution volume 10 ml, the solution was cooled, and the precipitate was filtered off. Yield 44%, mp 299–300°C (decomp., from

Scheme.



Ar = Ph (**a**), C<sub>6</sub>H<sub>4</sub>Cl-4 (**b**), C<sub>6</sub>H<sub>4</sub>Me-4 (**c**).

benzene). IR spectrum,  $\text{cm}^{-1}$ : 3070 br (NH), 1680 ( $\text{C}^4\text{O}$ ), 1610 br (COPh).  $^1\text{H}$  NMR spectrum,  $\delta$ , ppm: 4.93 s (1H,  $\text{C}^2=\text{CH}$ ), 6.46 d (1H,  $\text{H}^8$ ,  $J$  8.3 Hz), 7.34–7.82 group of signals (12H, 2Ph+ $\text{H}^{6,7}$ ), 8.12 d (1H,  $\text{H}^5$ ,  $J$  7.8 Hz), 14.71 s (1H,  $\text{N}^3\text{H}$ ).  $^{13}\text{C}$  NMR spectrum,  $\delta$ , ppm: 79.21 ( $\text{C}^2=\text{CH}$ ), 116.17–139.33 group of signals (2Ph+ $\text{C}_6\text{H}_4$ ), 154.48 ( $\text{C}=\text{CH}$ ), 158.40 ( $\text{C}^4=\text{O}$ ), 186.01 (COPh). Found, %: C 77.60; H 4.77; N 8.24.  $\text{C}_{22}\text{H}_{16}\text{N}_2\text{O}_2$ . Calculated, %: C 77.63; H 4.74; N 8.23.

Likewise were synthesized compounds **I**b**** and **I**c****.

**1-Phenyl-(E)-2-*p*-chlorophenacylidene-1,2,3,4-tetrahydroquinazolin-4-one (I**b**)**. Yield 37%, mp 250–251°C (decomp., from benzene). IR spectrum,  $\text{cm}^{-1}$ : 3060 br (NH), 1680 ( $\text{C}^4\text{O}$ ), 1610 br (COAr).  $^1\text{H}$  NMR spectrum,  $\delta$ , ppm: 4.90 s (1H,  $\text{C}^2=\text{CH}$ ), 6.45 d (1H,  $\text{H}^8$ ,  $J$  8.3 Hz), 7.35–7.82 group of signals (11H, Ph+ $\text{C}_6\text{H}_4$ + $\text{H}^{6,7}$ ), 8.12 d (1H,  $\text{H}^5$ ,  $J$  7.8 Hz), 14.67 s (1H,  $\text{N}^3\text{H}$ ). Found, %: C 70.48; H 4.04; Cl 9.48; N 7.46.  $\text{C}_{22}\text{H}_{15}\text{ClN}_2\text{O}_2$ . Calculated, %: C 70.50; H 4.03; Cl 9.46; N 7.47.

**(E)-2-*p*-Methylphenacylidene-1-phenyl-1,2,3,4-tetrahydroquinazolin-4-one (I**c**)**. Yield 46%, mp 253–255°C (decomp., from benzene). IR spectrum,  $\text{cm}^{-1}$ : 3040 br (NH), 1680 ( $\text{C}^4\text{O}$ ), 1600 br (COAr).  $^1\text{H}$  NMR

spectrum,  $\delta$ , ppm: 2.33 s (3H, Me), 4.99 s (1H,  $\text{C}^2=\text{CH}$ ), 6.43 d (1H,  $\text{H}^8$ ,  $J$  8.4 Hz), 7.10–7.74 group of signals (11H, Ph+ $\text{C}_6\text{H}_4$ + $\text{H}^{6,7}$ ), 8.23 d (1H,  $\text{H}^5$ ,  $J$  7.8 Hz), 14.59 s (1H,  $\text{N}^3\text{H}$ ). Found, %: C 77.92; H 5.13; N 7.90.  $\text{C}_{23}\text{H}_{18}\text{N}_2\text{O}_2$ . Calculated, %: C 77.95; H 5.12; N 7.90.

IR spectra of compounds synthesized were recorded on a spectrophotometer UR-20 from mulls in mineral oil.  $^1\text{H}$  and  $^{13}\text{C}$  NMR spectra were registered on a spectrometer Bruker WP-400 in  $\text{DMSO}-d_6$ , internal reference TMS. The homogeneity of compounds synthesized was confirmed by TLC on Silufol plates, eluent benzene–ethyl acetate, 5:1, development in iodine vapor.

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## REFERENCES

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