

LETTERS TO THE EDITOR

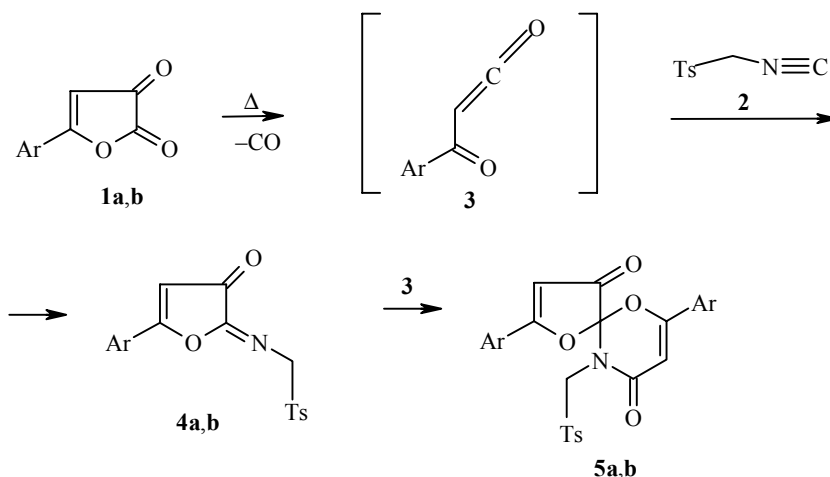
SYNTHESIS OF 5',6-DIARYL-3-TOSYLMETHYL-(3,4-DIHYDRO-2H-1,3-OXAZINE-2-SPIRO-2'-2',3'-DIHYDROFURAN)-3',4-DIONES

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Keywords: 5-aryl-2,3-dihydro-2,3-furandiones, 3,4-dihydro-2H-1,3-oxazine-2-spiro-2'-2',3'-dihydrofuran-3',4-diones, tosylmethyl isocyanide, cyclo addition.

We know that 5-aryl-2-tosylmethylimino-2,3-dihydro-3-furanones **4** are formed as a result of the reaction of 5-aryl-2,3-dihydro-2,3-furandiones (**1**) with tosylmethyl isocyanide (**2**) for a 1:1 mole ratio of reagents [1].

We have found that reaction of the same compounds in 2:1 ratio (absolute PhMe, 110°C, 1 h) leads to 5',6-diaryl-3-tosylmethyl(3,4-dihydro-2H-1,3-oxazine-2-spiro-2'-2',3'-dihydrofuran)-3',4-diones **5a,b**.



1, 3-5 a Ar = Ph, **b** Ar = *p*-BrC₆H₄

A possible reaction scheme includes thermal decarbonylation of furandione **1** and formation of arolylketene **3**, which reacts with isocyanide **2** in a cheletropic [4+1]-cycloaddition reaction. Iminofuranone **4** then reacts as a dienophile at its C=N bond with ketene **3**, which acts as the diene.

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Compounds **5a,b** also were obtained in 76% and 63% yield by an alternate synthesis from known samples of compounds **1** and **4**.

5',6-Diphenyl-3-tosylmethyl-(3,4-dihydro-2H-1,3-oxazine-2-spiro-2'-2',3'-dihydrofuran)-3',4-dione (5a, C₂₇H₂₁NO₆S). Yield 92%; mp 172-174°C (acetonitrile). IR spectrum (vaseline oil), ν , cm⁻¹: 1722 (C₍₃₎=O), 1677 (C₍₄₎=O). ¹H NMR spectrum (DMSO-d₆, 80 MHz), δ , ppm, *J* (Hz): 2.38 (3H, s, CH₃); 4.58 and 5.55 (2H, dd, *J* = 16, CH₂); 6.62 (1H, s, 5-H); 6.92 (1H, s, 4'-H); 7.72 (14H, m, ArH).

5',6-Bis-(*p*-bromophenyl)-3-tosylmethyl-(3,4-dihydro-2H-1,3-oxazine-2-spiro-2'-2',3'-dihydrofuran)-3',4-dione (5b, C₂₇H₁₉Br₂NO₆S). Yield 75%; mp 166-167°C (acetonitrile). IR spectrum (vaseline oil), ν , cm⁻¹: 1724 (C₍₃₎=O), 1681 (C₍₄₎=O). ¹H NMR spectrum (DMSO-d₆, 80 MHz), δ , ppm, *J*(Hz): 2.35 (3H, s, CH₃); 4.58 and 5.52 (2H, dd, *J* = 16, CH₂); 6.58 (1H, s, 5-H); 6.88 (1H, s, 4'-H); 7.35 (14H, m, ArH).

The elemental analysis data correspond to the calculated values.

REFERENCES

1. Yu. S. Andreichikov, S. N. Shurov, V. V. Zalesov, and N. N. Shapet'ko, *Zh. Org. Khim.*, **22**, 857 (1986).