Organic LETTERS

Addition/Correction

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Correction to Synthesis of β-Lactams Bearing Functionalized Side Chains from a Readily Available Precursor

M.-r. Lee, S. S. Stahl,* and S. H. Gellman*

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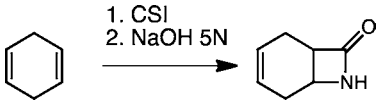
We have discovered a safety problem with the protocol for preparing (±)-7-azabicyclo[4,2,0]oct-3-en-8-one (**1**) as described in the Supporting Information.



(±)-7-Azabicyclo[4,2,0]oct-3-en-8-one (1). To 1,4-cyclohexadiene (25 g, 311.9 mmol) was added chlorosulfonyl isocyanate (44.2 g, 311.9 mmol) with stirring. The reaction mixture was stirred at 80 °C for 4 h and then cooled to room temperature. The reaction mixture was diluted with CH_2Cl_2 (30 mL) and poured into ice−water (mixture of water (250 mL) and ice); the pH was adjusted to 7 with 5 N NaOH. The aqueous solution was extracted several times with CH_2Cl_2. The combined organic layers were washed with brine and dried ($MgSO_4$). After filtration, the organic solution was concentrated in vacuo. The crude product was purified by silica column chromatography (eluent varied from 1:1 CH_2Cl_2/EtOAc to EtOAc) to give **1** in 50% yield as a solid: mp 122−125 °C; 1H NMR (300 MHz, $CDCl_3$) δ 5.93−5.83 (m, 1 H), 5.79−5.68 (m, 1 H), 5.59 (s, 1 H), 4.03−3.97 (m, 1 H), 3.42−3.35 (m, 1 H), 2.54−2.42 (m, 1 H), 2.41−2.28 (m, 1 H), 2.25−2.07 (m, 2 H); ^{13}C NMR (75 MHz, CDCl3) δ 170.8, 125.8, 124.2, 47.7, 46.7, 26.8, 21.1; HRMS (*m*/*z*, ESI) calcd for C_7H_9NO $(M^{\bullet})^+$ 123.0679, found 123.0678.

Recent efforts in our laboratories have revealed that this protocol carries a risk of dangerous pressure buildup in the reaction vessel. The problem appears to arise when chlorosulfonyl isocyanate and cyclohexadiene are combined and heated to 80 °C as a neat mixture. Following a dramatic color change to black, the reaction mixture may be violently ejected from the reaction vessel. The protocol we provided follows a procedure published in 1994; Singh and Cooper indicated that combining the reactants under neat conditions led to an improved outcome relative to use of a solvent.[1] However, a previously published procedure called for combining the reactants in anhydrous solvent.[2]

In our experience, the reaction can be conducted safely if the reactants are dissolved in CH_2Cl_2 that has been dried over CaH_2 (each reactant at 1 M), and the solution is then heated to reflux under N_2. This revised procedure has been performed numerous times for multiple alkene reactants in our hands without any problem. Any operation involving the use of chlorosulfonyl isocyanate should be conducted with caution.

REFERENCES

(1) Singh, R.; Cooper, R. D. G. *Tetrahedron* **1994**, *50*, 12049.
(2) Paquette, L. A.; Kakihana, T.; Hansen, J. F.; Philips, J. C. *J. Am. Chem. Soc.* **1971**, *93*, 152.

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