

Table 1. The reaction of three-membered heterocycles with phenyl acetate in the presence of DBU^{a)}

Substrate	Temp. (°C)	Bp (°C/Torr)	ν_{CO} (cm^{-1})	Product ⁴⁾ (isomer distribution)	Yield ^{b)} (%)
Oxirane	140	131/20	1745	<u>2a</u> (R=H) ⁵⁾	77
Methylaziridine	100	159-169/2 ^{c)}	1630	<u>2b</u> (R=CH ₃), <u>3b</u> (R=CH ₃) ⁶⁾ (68) (32)	24
Thiirane	160	99/2	1690	<u>2c</u> (R=H) ⁷⁾	2

a) The molar ratio of substrates. phenyl acetate / heterocycles / DBU = 1 / 1.2 / 0.03 . Reaction time; 4 h.

b) Total isolated yield based on phenyl acetate used.

c) Mixture of 2b (R=CH₃) and 3b (R=CH₃).

The distillate was recrystallized from cyclohexane to give

N-(2-phenoxyethyl)acetamide (2b, R=H), (0.72 g, 20%) : mp 88-89°C; IR (KBr) 1645 and 1540 (amide C=O) and 1250 cm^{-1} (phenyl ether Ph-O) ; NMR (CDCl_3) : δ 1.98 (3H, s, CH_3), 3.62 (2H, m, NHCH_2), 4.01 (2H, t, $j=4.8$ Hz, PhOCH_2), and 5.98 (1H, br, s, CH_3CONH). The product was identified by comparing with an authentic sample that was prepared by acetylation of 2-phenoxyethylamine.³⁾ In this reaction, the polymerization of aziridine also took place and reduced the yield of the product.

The results of the other reactions are summarized in Table 1. The reactions can be useful for synthetic purposes and the further investigation is in progress.

References and notes

- 1) a) A. Rosowsky, P. E. Fanta, D. D. Reynolds, and D. L. Fields, "Heterocyclic compounds with three- and four-membered rings," ed by A. Weissberger, Wiley-Interscience, London (1964).
b) N. S. Isaacs and K. Neelakantan, *Cand. J. Chem.*, **46**, 1043 (1968).
- 2) A. R. Sexton and E. C. Britton, *J. Am. Chem. Soc.*, **70**, 3606 (1948).
- 3) A. Uffer and E. Schlittler, *Helv. Chim. Acta.*, **31**, 1397 (1948).
- 4) All products gave satisfactory elemental analyses.
- 5) The product was identified by comparing with an authentic sample. W. J. Svirbely, W. M. Eareckson III, K. Matsuda, H. B. Pickard, I. S. Solet, and W. B. Tuemmler, *J. Am. Chem. Soc.*, **71**, 508 (1949).
- 6) The product isomer distribution of these compounds was determined by gas chromatography using a 2 m column of Apiezon grease L on Celite.
- 7) NMR (CDCl_3) : δ 2.23 (3H, s), 3.17 (2H, t, $j=4.8$ Hz) and 3.97 (2H, t, $j=4.8$ Hz).

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