UNUSUAL REARRANGEMENT OF 6-ACETYL-2,9-DIOXA-1-AZABICYCLO[4.3.0]NONANE

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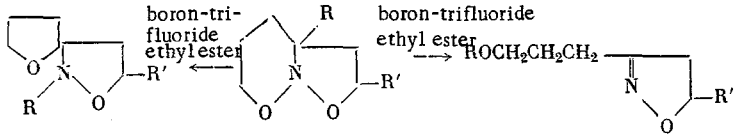
Derivatives of 6-R-8-R'-2,9-dioxa-1-azabicyclo[4.3.0]nonane (I) (R = CH_3, R' = C_6H_5, $COOCH_3$) rearrange in the presence of boron trifluoride ethyl ester to give 5-R-3-R'-8-oxy-1-aza-2-oxabicyclo[3.3.0]octane (R = CH_3, R' = C_6H_5, $COOCH_3$) [1,2]. We found that if R in (I) is an acetyl the rearrangement becomes substantially different. Compound (Ia) (R = Ac, R' = Ph) rearranges to give the first reported derivative of a novel class of heterocyclic compounds, i.e., a derivative of spiro(isoxazolidine-3,2'-tetrahydrofuran) (IIa). Compound (Ib) (R = Ac, R' = $COOCH_3$) gives the corresponding derivative of isoxazoline (IIb). Compound (IIa) is obtained as a mixture of two positional isomers. The reaction is carried out in abs. benzene at 5-8°C



R = Ac, R' = Ph (a), $COOCH_3$ (b)

using the stoichiometric amount of the reagents. Compound (IIa), yield 97%, mp 84-86° (from hexane). Found: C 67.70; H 7.12; N 5.46%. $C_{14}H_{17}NO_3$. Calculated: C 68.02; H 6.88; N 5.67%. IR spectrum (ν, cm^{-1}): 1660 (NC = O). NMR spectrum (in $CDCl_3$, δ, ppm): 2.03 s (CH_3CO); 5.23 q and 4.96 t (CH—O); 3.63-4.37 m (CH_2O); 1.70-3.02 m ($3CH_2$). Compound (IIb), yield 68%, bp 145°/0.8 mm. Found: C 52.04; H 6.50; N 6.38%. $C_{10}H_{15}NO_5$. Calculated: C 52.40; H 6.55; N 6.11%. IR spectrum (ν, cm^{-1}) 1750 (C = O). NMR spectrum (in CCl_4, δ, ppm); 3.72 s (CH_3OOC); 1.97 s (CH_3CO); 4.87 t (CHO); 4.03 t (CH_2—O) 3.16 d (CH_2CH); 2.37 t (CH_2C =); 1.56-2.11 m (CH_2).

LITERATURE CITED

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