

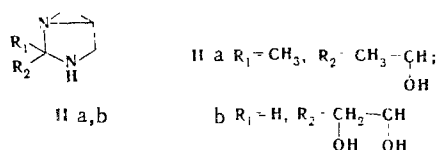
REACTION OF 2-AMINOMETHYLETHYLENEIMINE WITH SOME KETO AND  
 $\alpha$ - AND  $\beta$ -DICARBONYL COMPOUNDS\*

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Continuing our research on the reactivity of 2-aminomethylethyleneimine (I) in reactions with carbonyl compounds, as a result of which we obtained a new heterocyclic system — 1,3-diazabicyclo[3.1.0]hexane — we present the results of an investigation of the reactions of I with several keto and  $\alpha$ - and  $\beta$ -dicarbonyl compounds (with acetone, glyceraldehyde, diacetyl, and acetylacetone).

We found that 2-substituted-1,3-diazabicyclo[3.1.0]hexanes IIa,b are formed as the chief reaction products in the reaction of I with acetone and glyceraldehyde.

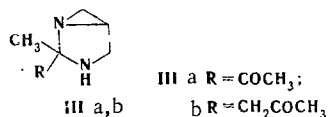


EXPERIMENTAL

2-Methyl-2-(2-hydroxyethyl)-1,3-diazabicyclo[3.1.0]hexane (IIa). This compound had bp  $95-97^\circ$  (2 mm) and  $n_D^{22}$  1.4635. Found: C 58.7; H 10.5; N 19.5%.  $\text{C}_7\text{H}_{14}\text{N}_2\text{O}$ . Calculated: C 58.7; H 10.5; N 19.7%. IR spectrum,  $\text{cm}^{-1}$ : 3010, 3070 ( $\nu \text{ N} \begin{matrix} \text{CH}_2 \\ | \\ \text{CH}_2 \end{matrix}$ ); 3340-3400 (OH, NH); 1220 ( $\delta \text{ N} \begin{matrix} \text{CH}_2 \\ | \\ \text{CH}_2 \end{matrix}$ ).

2-(1,2-Dihydroxyethyl)-1,3-diazabicyclo[3.1.0]hexane (IIb). This compound had bp  $150-152^\circ$  (2 mm) and  $n_D^{22}$  1.5324. Found: C 50.2; H 8.7; N 19.3%.  $\text{C}_6\text{H}_{12}\text{N}_2\text{O}_2$ . Calculated: C 50.0; H 8.3; N 19.4. IR spectrum,  $\text{cm}^{-1}$ : 3010, 3060 ( $\nu \text{ N} \langle \rangle$ ); 3340-3400 ( $\nu$  OH, NH); 1240 ( $\delta \text{ N} \langle \rangle$ ).

Condensation products of the IIIa,b type were obtained by reaction of I with the simplest  $\alpha$ - and  $\beta$ -dicarbonyl compounds:



2-Methyl-2-acetyl-1,3-diazabicyclo[3.1.0]hexane (IIIa). This compound had mp  $42^\circ$  (from hexane). Found: C 60.4; H 8.4; N 19.8%.  $\text{C}_7\text{H}_{12}\text{N}_2\text{O}$ . Calculated: C 60.3; H 8.6; N 20.0%. IR spectrum,  $\nu$ ,  $\text{cm}^{-1}$ : 3290 (NH); 3012, 3080 ( $\text{N} \langle \rangle$ ); 1690 (C=O).

\*Communication X from the series "Chemistry of Ethyleneimine," See [1] for communication IX.

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2-Methyl-2-(acetyl)-1,3-diazabicyclo[3.1.0]hexane (IIIb). This compound had bp 139-140° (3 mm) and  $n_D^{22}$  1.5460. Found: C 62.1; H 9.2; N 18.0%.  $C_8H_{14}N_2O$ . Calculated: C 62.0 H 9.1; N 18.2%. IR spectrum,  $\nu$ ,  $cm^{-1}$ : 3280 (NH); 3010, 3080 (N-H); 1700 (C=O).

#### LITERATURE CITED

1. S. A. Giller, M. Yu. Lidak, A. V. Eremeev, and V. A. Kholodnikov, Khim. Geterotsikl. Soedin., 483 (1972).