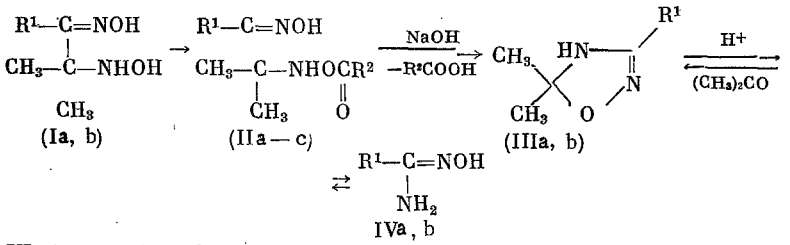
CONVERSION OF 1,2-(ACYLOXYAMINO)OXIMES INTO 4,5-DIHYDRO-1,2,4-OXADIAZOLES

A. Ya. Tikhonov, N. V. Belova,
and L. B. Volodarskii

UDC 542.91:542.793.4

During investigation of the properties of 1,2-hydroxyaminooximes (Ia, b) and their derivatives [1] we found that 1,2-(acyloxyamino)oximes (IIa-c), obtained by acylation of 1,2-hydroxyaminooximes (Ia, b), are converted into 4,5-dihydro-1,2,4-oxadiazoles (IIIa) (mp 78-79°C) and (IIIb) (mp 135-137°C) with yields of ∿50-70% when treated with alkali in dioxane. The nitrogen atoms, which are in vicinal positions in compounds (IIa-c), become geminal in 4,5-dihydro-1,2,4-oxadiazoles (IIIa, b). From (IIc) the 1,2-hydroxyaminooxime (Ib) was obtained with a yield of ∿15% in addition to compound (IIIb). Treatment of 4,5-dihydro-1,2,4-oxadiazoles (IIIa, b) with an aqueous solution of hydrochloric acid leads to the known acetamidooxime (IVa) and benzamidooxime (IVb) [2], which form the same 4,5-dihydro-1,2,4-oxadiazoles (IIIa, b) during acid-catalyzed condensation with acetone or its diethyl acetal [2]:



R^1=CH_3 (a); R^1=C_6H_5 (b, c); R^2=CH_3 (IIa, b); R^2=CH_2Cl (IIc).

The structure of 3,5,5-trimethyl-4,5-dihydro-1,2,4-oxadiazole (IIIa) was established by x-ray crystallographic analysis. The elemental analysis and IR, UV, and PMR spectra of compounds (II, III) are consistent with the given structure.

LITERATURE CITED

1. L. B. Volodarskii, Khim. Geterotsikl. Soedin., 1299 (1973).
2. F. Eloy and R. Lenaers, Chem. Rev., 62, 155 (1962).

Novosibirsk Institute of Organic Chemistry, Siberian Branch, Academy of Sciences of the USSR. Translated from Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No. 10, pp. 2412-2413, October, 1982. Original article submitted June 18, 1982.

 0568-5230/82/3110-2128$07.50