REACTION OF METHYL ESTER OF N-METHYLIMIDOACETIC ACID WITH CHLORAL

L. V. Nesterov and R. A. Sabirova

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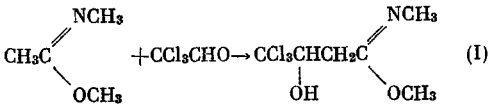
We found that the reaction of the methyl ester of N-methylimidoacetic acid with chloral in ether solution gives the methyl ester of N-methylimido-β-hydroxy-γ,γ,γ-trichlorobutyric acid (I) in 32.5% yield, mp 105° (from CCl_4).



Found: C 30.86; H 4.43; Cl 44.94; N 6.14%. $C_6H_{10}Cl_3NO_2$. Calculated: C 30.73; H 4.90; Cl 45.36; N 5.97%. The structure of (I) was confirmed by the IR and NMR spectra, and also by aqueous hydrolysis to the methyl ester of β-hydroxy-γ,γ,γ-trichlorobutyric acid (II), mp 61-62° (from petroleum ether). From [1]: mp 62-63°. Found: C 27.10; H 3.25%. $C_5H_7Cl_3O_3$. Calculated: C 27.08; H 3.19%. The structure of (II) was also confirmed by the NMR spectrum. As a result, the reaction goes by the aldol condensation scheme, and not by the expected (2 + 2)-cycloaddition scheme, as in the reaction of chloral with the structurally close ketene dimethyl acetal [1].

LITERATURE CITED

1. L. V. Nesterov and R. A. Saibirova, Izv. Akad. Nauk SSSR, Ser. Khim., 668 (1972).

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