LETTERS TO THE EDITOR

REACTION OF N-NITRAMINOTETRAZOLE SALTS WITH GLYCIDOL

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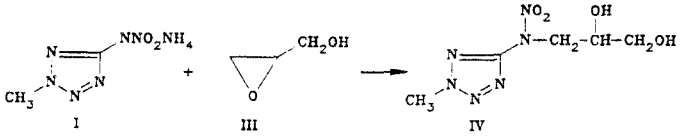
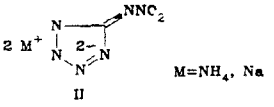
It has been shown [1, 2] that the 2-methyl-5-nitramino-tetrazole salt (I) is alkylated by alkyl halides only at the N-nitramino group whereas the salts of 5-nitraminotetrazole (II) and 1-methyl-5-nitrotetrazole are alkylated initially in the tetrazole fragment and only then at the nitramino group. The proposal has been made [2] that this is due to differences in the tautomeric forms of the relevant N-nitraminotetrazole salts. It appears that I is in the nitramino form whereas the other two compounds exist as the nitroimines [3]. We have now studied the alkylation of N-nitraminotetrazole salts using α-oxides and find that I and II differ in their reactivity towards glycidol (III). Compound I reacts with glycidol to give the expected alkylation product IV.



I III IV

By contrast, compound II does not react with glycidol under a wide range of reaction conditions and this is apparently related to the different tautomeric forms of salts I and II. In fact glycidol reacts with the N-nitramino group of I and does not react with the tetrazole fragment of II.



II

2-Methyl-5-(N-propan-2,3-diol-N-nitramino)tetrazole (IV) was obtained by heating a solution of I (2 g, 12 mmole) in water (10 ml) with HCl (10%, 0.2 ml) and glycidol (1.1 g, 14 mmole) at 40°C for 15 h. Product IV was extracted with ether (2 × 10 ml), purified on an Al_2O_3 column, and the ether removed at 40°C (5 mm Hg) to give an oily product (1.32 g, 49%) with a marked decomposition temperature (DTA) of 163°C. IR spectrum: 1587, 1292 (NNO_2), 1010, 1080, 1120 cm^{-1} (tetrazole ring). The elemental analytical data and the hydroxyl group content agreed with those calculated.

LITERATURE CITED

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