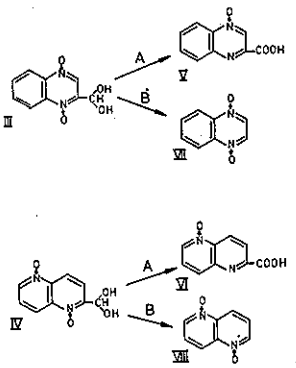

action A to form 2-carboxyquinoxaline 4-N-oxide (V) or 2-carboxy-1,5-naphthyridine 5-N-oxide (VI) respectively and reaction B to form di-N-oxides of unsubstituted quinoxaline or 1,5-naphthyridine (VII and VII).

Quinoxaline-2-aldehyde isolated in the form of a carbonyl compound mainly undergoes reaction B changing to quinoxaline-di-N-oxide.

The optimum pH ranges for reactions A and B were investigated and a possibility of these reactions proceeding simultaneously shown.

The differences in the behavior of quinoxaline and 1,5-naphthyridine di-N-oxides derivatives were revealed.

The transformations of diethylacetal quinoxaline-2-aldehyde di-N-oxide proceeding in the presence of alkaline reagents were studied.

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POLAROGRAPHIC REDUCTION OF ISOXAZOLES AND THEIR AZAANALOGS IN ANHYDROUS DIMETHYLFORMAMIDE

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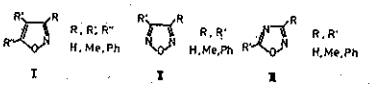
The polarographic behavior of substituted isoxazoles (I) and their azaanalogs (II, III)



was studied in anhydrous dimethylformamide against the background of quarternary ammonium salts. It was shown that the phenyl substituted compounds I possess polarographic activity and the first irreversible two-electron wave corresponds to N-O-bond rupture to form the dianion which is capable of being reduced only in a more negative potential range. In an accessible potential range, four-electron reduction of the derivatives I is likely, with the $E_{1/2}$ value of the second wave depending on the cation nature of the background. Complete saturation of multiple bonds after N-O-bond rupture requiring six electrons can be realized in excess proton donors(benzoic acid).

While reducing the derivatives II and III the first stage also involves two-electron irreversible rupture of N-O-bond. Isoxazole analogs are reduced substantially easier in all cases. The reduction depth of oxadiazoles studied is determined by their structure and protonation rate of intervening particles formed. In the accessible potential region oxadiazol III(R = R' = Me) is capable of accepting two electrons, oxadiazoles II(R = R' = Me), III(R = R' = Ph), III(R = Ph, R' = Me) and III(R = Me, R' = Ph) — four electrons. Complete molecular reduction involving eigth electrons takes place only in the case of oxadiazole II(R = R' = Ph).

In the series of isoxazole I and oxadiazole II and III derivatives greater conjugation of the phenyl ring in the fifth position facilitates the reduction as compared to the corresponding 3-substituted compounds. The replacement of methyl substituents by phenyl ones in disubstituted oxadiazoles III leads to facilitating the reduction/$\Delta E^{1/2}$ of the first waves — 970 mV whereas the analogous effect for oxadiazoles II is 540 mV which is determined by partially broken conjugation due to space interaction of benzene rings in case of 3,4-diphenyl-1,2,5-oxadiazole.

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SYNTHESIS AND REACTIONS OF ARYLOXYFURAN DERIVATIVES

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A general method of preparing aryloxyfuran derivatives has been developed.

The aryloxyfuron formulation according to the method of Vilsmeier yields 5-aryloxyfurfurals, which were further transformed to 5-aryloxy-2-methylfurans by the Kishner-Wolff reduction.

The corresponding amides were obtained on the basis of the aryl esters of 5-aryloxypyromucic acids and then turned into 2-aminomethyl-5-aryloxyfyrans by the reduction with $LiAlH_4$.

The aryl esters of aryloxypyromucic acids reacted with hydrazine-hydrate to give aryloxypyromucic hydrazides, which formed isopropylidene derivatives by the reaction with acetone.

The hermistatic activity of the compounds synthesized has been investigated

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THE REACTION OF ARYL- AND ARYLOXYFURANS WITH DIMETHYL ACETYLENEDICARBOXYLATE

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The diene synthesis of aryl- and aryloxyfurans with dimethyl acetylenedicarboxylate has been studied.

The interaction of arylfurans with acetylenedicarboxylic ester yields adducts, which undergo aromatization leading to the esters of hydroxybiphenyldicarboxylic acids.