

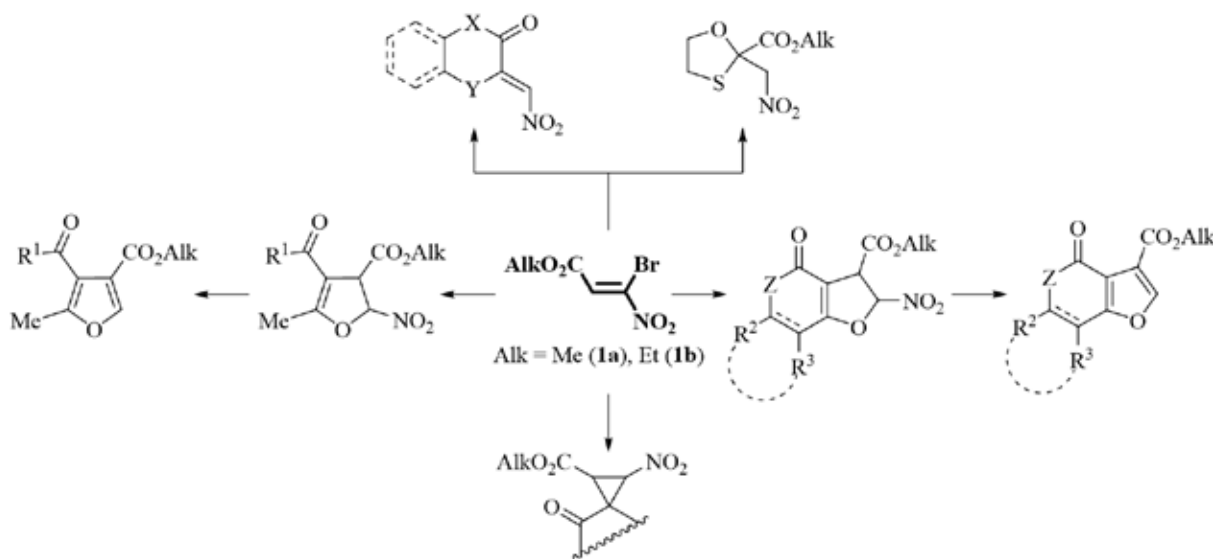
ALKYL 3-BROMO-3-NITROACRYLATES IN THE SYNTHESIS OF CARBO- AND HETEROCYCLIC STRUCTURES

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The presence of several electrophilic centers in the molecule of alkyl 3-bromo-3-nitroacrylates creates good conditions for obtaining various carbo- and heterocyclic structures in the reaction with nucleophilic reagents.

We have studied the behavior of alkyl 3-bromo-3-nitroacrylates **1a,b** in reactions with representatives of acyclic and cyclic CH-acids, aliphatic and aromatic 1,4-binucleophilic reagents.



It was shown that the reactions of bromonitroacrylates **1a,b** with representatives of acyclic CH-acids (pentane-2,4-dione, alkyl 3-oxobutanoates) lead to the formation of polysubstituted nitrodihydrofurancarboxylates, which undergo aromatization due to the elimination of HNO_2 . Interaction with cyclic CH-acids, in the case of cyclohexane-1,3-dione, 5,5-dimethylcyclohexane-1,3-dione, 4-hydroxy-6-methyl-2H-pyran-2-one, 4-hydroxy-2H-chromen-2-one proceeds similarly and leads to the production of condensed nitrodihydrofurancarboxylates and the corresponding furancarboxylates. At the same time, reactions with 2,2-dimethyl-1,3-dioxane-4,6-dione and 5-methyl-2-phenyl-2,4-dihydro-3H-pyrazol-3-one result in the formation of spiro-fused nitrocyclopropanecarboxylates.

Reactions of bromonitroacrylates **1a,b** with 1,4-binucleophiles (ethane-1,2-diamine, propane-1,2-diamine, 2-aminoethan-1-ol, benzene-1,2-diamine, 2-aminophenol, 2-mercaptophenol) lead to the formation of nitromethylene-containing derivatives of piperazine or 1,4-benzodiazinone, as well as their sulfur- and oxygen-containing heteroanalogues. The interaction of bromonitroacrylates **1a,b** with 2-mercaptoethan-1-ol, depending on the conditions, ends with the synthesis of a mixture of easily separated 1,3-oxathiolane-2-carboxylates and 1,4-oxathian-2-one.

In general, the studied chemical behavior of alkyl 3-bromo-3-nitroacrylates demonstrates a high potential in the synthesis of carbo- and heterocyclic structures.

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