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KINETICS AND MECHANISM OF THE KABACHNIC-FIELDS REACTION

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The Kabachnic-Fields reaction is one of the most important methods of synthesis of functionally substituted derivatives of tetracoordinated phosphorus with P-C bond. At the same time mechanism of this important and interesting reaction practically has not been investigated.

This issue is devoted to results of systematic preparative and kinetic investigations of the Kabachnic-Fields reaction mechanism in different three components systems dialkylphosphite-carbonyl compound-amine and also the kinetic laws of all the possible in these systems concurrent bimolecular reactions.

It has been established that the mechanism of the Kabachnic-Fields reaction is significantly depended on amine basicity. If this basicity is high enough, as for instance in the case of cyclohexylamine, amine activates the dialkyl hydrogen phosphite (DAHP) molecule and reaction is carrying out through the primary addition of DAHP on the carbonyl group with the subsequent substitution of hydroxyl in α -hydroxy-derivative on the amino group. In the case of amines with low basicity (for instance, aniline) the obtained results digitally proves the formation of the imine on the first stage of the Kabachnic-Fields reaction with the following addition of DAHP on C=N bond with the same α -aminophosphonate formation.

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