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Kinetics and Mechanism of the Kabachnik-Fields Reaction: IV. Salicyaldehyde in the Kabachnik-Fields Reaction

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Abstract

Salicylaldehyde, unlike benzaldehyde, sets the Kabachnik-Fields reaction on the way of initial imine formation. This is explained by the thermodynamic instability of hydroxyphosphonates derived from salicyalaldehyde, which blocks the second possible Kabachnik-Fields reaction route involving intermediate hydroxyphosphonate formation. The kinetics and mechanism of addition of dialkyl hydrogen phosphites at the C=N bond of the intermediate N-substituted imines (the final stage of the "imine" Kabachnik-Fields reaction) are well consistent with the earlier proposed unified reaction mechanism.