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Eesti tuleviku heaks

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CYCLOPROPANE-CONTAINING COMPOUNDS IN ORGANOCATALYTIC REACTIONS

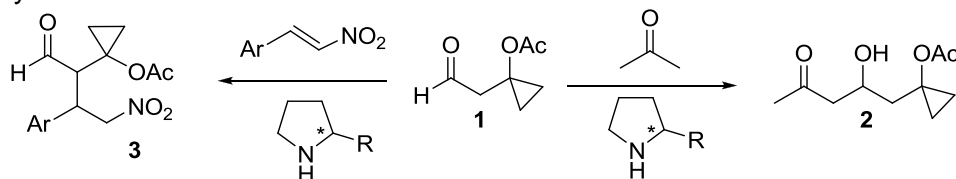
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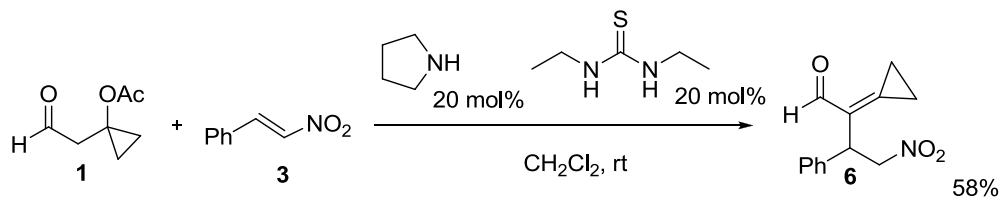
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Cyclopropane-containing compounds, which have biological activities in natural systems¹, have attracted organic chemists for a long time. Cyclopropane subunits occur in many natural products e.g. 1-aminocyclopropane-1-carboxylic acid is a general precursor of the plant hormone ethylene, coronatin is a strong elicitor of stress response in plants, pyrethroids are insecticides².

1-(2-oxoethyl)cyclopropyl acetate **1** is a multifunctional compound that can be used in organocatalytic Michael and aldol reactions via formation of enamines.



Screening of different organocatalysts and solvents in aldol reaction resulted in the complex mixture of unstable products. In Michael reaction additional activation of the Michael acceptor with thiourea allowed to get α,β -unsaturated carbonyl compound **6** containing cyclopropane ring in 58% yield.



Alkylidenecyclopropanes **6** are highly strained molecules, but at the same time, most of them are stable enough for use in many synthetic applications³. Investigation of 1-(2-oxoethyl)cyclopropyl acetate **1** as a starting material in different organocatalytic cascade reactions is ongoing.

References:

1. Wessjohann, L. A.; Brandt, W. *Chem. Rev.* **2003**, *103*, 1625.
2. Elliott, M.; Farnham, A. W.; Janes, N. F.; Needham, P. H.; Pulman, D. A. *Nature* **1973**, *244*, 456.
3. Brandi, A.; Cicchi, S.; Cordero, F. M.; Goti, A. *Chem. Rev.* **2003**, *103*, 1213.