COMPARISON OF TWO SYNTHETIC STRATEGIES TOWARDS 1-ACYL-2-VINYLCYCLOPROPANES

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Two strategies utilizing a copper carbenoid route and a shorter route via sulfur ylides have been examined for their potential towards the synthesis of 1-acyl-2-vinyl-cyclopropanes.

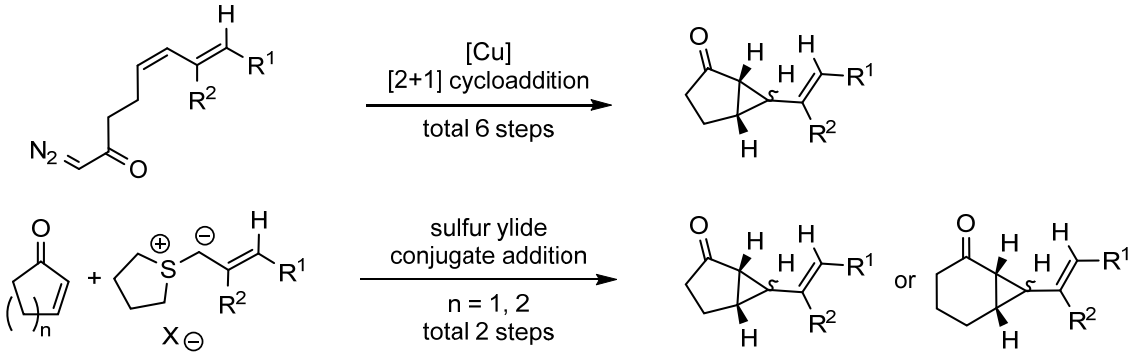

Figure 1: Schematic reactions towards racemic 1-acyl-2-vinylcyclopropanes.

The Cu^{2+}-catalyzed carbenoid route gave access to racemic 1-acyl-2-vinylcyclo-propanes in 6 steps with yields from < 5 % up to 64 %. As an alternative, a route starting from cyclopentenone or cyclohexenone using sulfur ylides was examined. This 2-step route gave yields ranging from 17 % up to 62 % for cyclopentenone derivatives. The corresponding reactions with cyclohexenone proceeded with lower overall yields due to the formation of several side products. The influence of the substituents R^1 and R^2, the counterion X^{--} and the ringsize n on the yields and the cis/trans ratio were studied. Finally, possible mechanisms for the formation of main and side products were discussed [1].

[1] A. Zens, P. Seubert, B. Kolb, M. Wurster, M. Holzwarth, F. Mannchen, R. Forschner, B. Claasen, S. Laschat and D. Kunz, *Synthesis* **2018**, *50*, 2367–2384.