Ring-opening of cyclic ethers with carbon–carbon bond formation by Grignard reagents

The ring-opening of cyclic ethers with concomitant C–C bond formation was studied with a number of Grignard reagents. The transformation was performed in a sealed vial by heating to ∼160 °C in an aluminum block or at 180 °C in a microwave oven. Good yields of the product alcohols were obtained with allyl- and benzylmagnesium halides when the ether was tetrahydrofuran or 3,3-dimethyloxetane. Lower yields were obtained with substituted tetrahydrofurans while no ring-opening was observed with tetrahydropyran. Only highly reactive allyl and benzyl Grignard reagents participated in the transformation while no reaction occurred with other alkylmagnesium halides.

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