MECHANISTIC INVESTIGATION ON THE EFFECT OF UREA/THIOUREA ADDITIVES IN THE PROLINE DERIVATIVE CATALYZED SYNTHESIS OF α-SUBSTITUTED TETRAHYDROFURAN DERIVATIVES

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A mechanistic study of the influence of (thio)urea additives on the proline catalyzed construction of linear α-substituted tetrahyrofuran/pyran derivatives starting with lactol substrates is presented. This reaction demonstrates the emerging utility and potential complications of using proline/(thio)urea co-catalysis as each of these catalysts is necessary to provide the observed reactivity, but a time dependent decrease in enantioselectivity is observed. New mechanistic insights as well as emerging methods for use of proline/urea/thiourea co-catalysis in flow are presented