ABSTRACT:

Within the framework of this Thesis, a method fot the preparation of 3,6-disubstituted pyranones was developed and 15 final lactones were synthesized, and their cytostatic and antifungal activity was investigated. Principal steps in the preparation of the compounds were Yamaguchi-Hirao alkylation, hydroalumination followed by iodation and Pd-catalyzed carbonylative lactonization. None of the target compounds displayed interesting cytostatic or antifungal activity (IC50 < 10 μmol/L), which was suprising given the significant antifungal activity of analogous butenolides. The development of the synthesis of 3-monosubstituted pyranones is described next. Our strategy is based on the use of 5,6-dihydro-2*H*-pyran-2-one as the starting material, which was converted into the 3-iodo-5,6-dihydro-2*H*-pyran-2-one in one step. The key step of the synthesis was Pd-catalyzed Suzuki coupling. Finally, the preparation of α- and β-substituted-γ-alkylidenepentenolides is described. The target compounds exhibited significant cytostatic activity (IC50 < 5 μmol/L) against all tested tumor cells (CCRF-CEM, HeLa S3, HT 29, HL 60, L 1210).