Charles University in Prague, Faculty of Pharmacy in Hradec Kralove
Department of Pharmaceutical Chemistry and Drug Control

SYNTHESIS OF PRECURSORS FOR BIOLOGICALLY ACTIVE LACTONES I.

Diploma Thesis

Hana Bemova

A number of unsaturated five membered lactones from the family of 2,5-dihydrofuran-2-ones exert high biological activity, effecting cytotoxic, antifungal or antiviral, for example. The search of this diploma thesis resumes synthetic derivates of 2,5-dihydrofuran-2-ones with antineoplastic activity.

Within this project two novel methyl (*Z)*- and two methyl *(E)*-5-aryl-2-brompent-2-en-4-ynoates were prepared by Sonogashira couplings methyl dihalogenpropiolates (*E*- and *Z*-isomers were developed by bromination of methyl propiolate) with arylethynes – phenylacetylene and 4-ethynyl-*N*,*N*-dimethylaniline. Apart from the side product of homocoupling, β-monoalkynylated products were obtained in these reactions. A dialkynylated product was isolated in high yield (about 90 %) from the reaction with double phenylacetylene. All prepared substances can serve as precursors for various other coumpounds. The acids prepared by hydrolysis of methyl (*E*)-5-aryl-2-brompent-2-en-4-ynoates will be used for the lactonization into 5-alkyliden-2,5-dihydrofuran-2-ones. The target compounds containing group of γ-butyrolactone will be evaluated for their antineoplastic and antiviral activity.