**ABSTRACT:**

Charles University in Prague

Faculty of Pharmacy in Hradec Králové

Department of Inorganic and Organic Chemistry

Candidate: Zbyněk Brůža

Consultant: Prof.RNDr. Milan Pour, Ph.D.

Title of Thesis: Synthesis of new derivatives of combretastatin

The aim of this work was the synthesis of novel structural analogues of combretastatin, including further structural modifications. Synthetic modifications might improve biological activity as well as pharmacokinetics of the compounds. Two 3,4-diaryl-2,5-dihydrofuran-2-ones were synthesized. The sequence comprises well-known reactions starting from α-halogenated acetophenones, which are converted to esters of phenylacetic acids. The esters are then cyclized to the final 2,5-dihydrofuran-2-ones analogues under basic conditions. The title compounds were screened for their antibacterial, antifungal and cytotoxic activity.

Because of the difficulties especially in the cyclization step, we have tried to develop an alternative synthetic procedure based on Pd-catalysed cross-coupling reactions of different aryl halides with heterocycles as bridging structural fragments.