Abstract

Extract from milk thistle (*Silybum marianum* (L.) Gaertn., synonym *Carduus marianus* L., Asteraceae) silymarin contains among others primarily bioactive flavonolignans. They have hepatoprotective and antioxidative effects and also anticancer, chemoprotective, dermatoprotective and hypocholesterolemic activity.

This thesis focuses on the preparation of metabolites of the second phase of biotransformation unexplored flavonolignans 2,3-dehydrosilybin (DHSB), silychristin (SCH), 2,3-dehydrosilychristin (DHSCH). Pure sulfated derivatives were prepared using aryl sulfotransferase from *Desulfitobacterium hafniense* and *p*-nitrophenyl sulfate (*p*- NPS) as a donor. Flavonolignans yield exclusively monosulfates at the position C-20 (C-19 in the case of silychristin and 2,3-dehydrosilychristin), except for 2,3-dehydrosilybin that gives also the 7,20-disulfated derivatives.

For all samples were made antioxidant tests – DPPH assay (the highest activity had 2,3-dehydrosilychristin sulfate: IC_{50}= 7,87 μM), Folin-Ciocalteau reduction assay (the highest activity had 2,3-dehydrosilychristin: 1,58 ekvivalents of gallic acid), $ABTS^{+\bullet}$ scavenging (the highest activity had silychristin: 1,50 ekvivalents of vitamin C), inhibition of microsomal lipid peroxidation (the highest activity had 2,3-dehydrosilybin: IC_{50} = 10,6 μM), FRAP assay (the highest activity had 2,3-dehydrosilybin disulfate: 1,61 ekvivalents of Fe^{3+}) and DMPD assay (the highest activity had 2,3-dehydrosilybin disulfate: 1,90 ekvivalents of vitamin C).

Part of this work was also study of glucuronides of silychristin. Its creation was confirmed based on the experiments.