ABSTRACT

Plants and their secondary metabolites exhibit a wide range of biological effects including e.g. cardioprotective, antiinflammatory, or anticancer activity. It is also known that these effects are in many cases derived from antioxidant activity. In our study, 87 extracts from various parts of plants from European members of family Asteraceae (subfamilies Asteroideae and Cichorioideae) were assayed for radical scavenging activity by means of DPPH test using the SIA method. DPPH radical scavenging activity of all tested plant extracts was evaluated according to parameter EC_{50}. The leaves of *Leuzea carthamoides* (EC_{50} = 0,046 $mg.ml^{-1}$) were chosen as the most promising sample for the subsequent phytochemical study with the purpose to isolate antioxidant active compounds. Eight natural compounds were isolated (six flavonoids and two phenolic acids) from the most antioxidant active ethyl-acetate extract (EC_{50} = 0,038 $mg.ml^{-1}$): hispidulin (LC-1), eriodiktyol (LC-2), patuletin (LC-3), 4-hydroxybenzoic acid (LC-4), 3,4-dihydroxybenzoic acid (LC-5), patuletin-3´-β-xylofuranoside (LC-6), 6-hydroxykemferol-7-O-(6´´-O-acetyl-β-D-glucopyranoside) (LC-7), and eriodiktyol-7-β-glukopyranoside (LC-8). Flavonoid LC-6 was indicated as a new natural compound. Antioxidant activity of isolated compounds was evaluated by DPPH test (EC_{50}) and ferric reducing antioxidant power test (FRAP vules at 4 and 60 minutes) and compared with trolox and quercetin. Both tests evaluated flavonoid LC-7 as the most antioxidant active compound. EC_{50} value for LC-7 was 29,9 µM. EC_{50} value for quercetin was 25,3 µM and for trolox was 27,8 µM. FRAP values for LC-7 in time interval 4 and 60 min were 33,1 µM resp. 65,3 µM. FRAP values for quercetin were 46,9 µM resp. 82,2 µM and for trolox were 20,4 µM resp. 23,7 µM. In addition, *in vitro* antiplatelet activity of isolated compounds was determined in human platelet rich plasma. AA, ADP and COL were used as agonists of platelet aggregation. EC_{50} values of compounds and the standard ASA were evaluated. The highest platelet inhibition exhibited compound LC-1. EC_{50} (µM) values for LC-1 were: 1060 ± 54 for ADP, 100 ± 24 for COL, and 522 ± 13 for AA. EC_{50} values for ASA were: 89 ± 10 for COL and 18 ± 2 for AA. The structure/antioxidant and structure/antiplatelet activity relationships of isolated compounds are presented. New HPLC method for quantitative determination of *L. carthamoides* compounds is also enclosed. From the isolated compounds, the highest content was determined for flavonoid LC-8 (0,574 % of dry matter). The study evaluated *L. carthamoides* as a promising plant for future studies with the purpose to propose a new

cardioprotective preparation.

Keywords: antioxidant effect, antiplatelet effect, *Leuzea carthamoides*, DPPH test, polyphenols, flavonoids, phenolic acid, determination.