

ABSTRACT

Drabbová, A.: Title of Diploma Thesis: *Centaurea cyanus* L. (Asteraceae) alkaloids and their biological activity related to Alzheimer's disease. Charles University, Faculty of Pharmacy in Hradec Králové, Department of Pharmaceutical Botany, Hradec Králové 2020.

Ethyl acetate and chloroform alkaloids extracts were prepared from *Centaurea cyanus* L. seeds. A novel alkaloid AD-1 (Adrabbín) was isolated from the ethyl acetate extract by common chromatographic methods (column chromatography, preparative TLC). Its structure was elucidated by mass spectrometry, NMR analysis and determination of optical rotation. The alkaloid AD-1 (Adrabbín) possesses a unique structure which consists of a cyclic indole moiety. Also LC-MS analysis of fractions obtained by flash chromatography was performed. In those fractions were detected molecular ions related to compounds previously isolated from other *Centaurea* species.

Alkaloid AD-1 (Adrabbín) was tested on ability to inhibit human cholinesterases, prolyl oligopeptidase and glycogen synthase kinase 3 β . The compound was considered against human cholinesterases inactive (IC₅₀ values > 100 μ M). Interestingly, the alkaloid inhibited prolyl oligopeptidase the same intensity as a standard berberine (AD-1: IC₅₀ 143,0 \pm 6,0 μ M; berberin: IC₅₀ 142,0 \pm 21,0 μ M). The novel compound has not been tested yet on inhibition of glycogen synthase-kinase 3 β due to the current COVID-19 pandemic.

Key words: *Centaurea cyanus* L., seeds, indole alkaloids, AD-1(Adrabbín), acetylcholinesterase, butyrylcholinesterase, prolyl oligopeptidase, glycogen synthase-kinase 3 β .