

ABSTRACT

Dušánková Z.: Alkaloids of *Papaver rhoeas* L. (Papaveraceae) and their biological activity related to Alzheimer's disease V.; Diploma thesis, Charles University, Faculty of Pharmacy in Hradec Králové, Department of Pharmacognosy and Pharmaceutical Botany, Hradec Králové 2023, pages 72.

The aim of this diploma thesis was focused on isolation of alkaloids from a combined fraction 7–8 of an alkaloidal diethyl ether (Et₂O) extract of aerial parts of *Papaver rhoeas* L. (Papaveraceae). Column chromatography (flash chromatography), planar chromatography (preparative TLC) and crystallization were used for the isolation of alkaloids. The structures of isolated substances were elucidated using NMR, GC-MS methods and optical rotation. Isolated alkaloids were identified as ZD-1, (+)-3,4-dehydrotheaspirone, (±)-juziphine, (+)-lirinidine and protopine. Alkaloids were tested for biological activity against enzymes (acetylcholinesterase, butyrylcholinesterase and prolyl oligopeptidase).

(+)-3,4-Dehydrotheaspirone, (±)-juziphine, and protopine did not show significant inhibitory activities against cholinesterases (IC₅₀ values >100 μM). Protopine was also inactive against prolyl oligopeptidase (IC₅₀ >1000 μM). (+)-Lirinidine showed a moderate inhibitory activity against BuChE (IC₅₀ value of 23,45 ± 0,55 μM), towards AChE was considered inactive (IC₅₀ value > 100 μM).

Key words: Alzheimer's disease, *Papaver rhoeas* L., acetylcholinesterase, butyrylcholinesterase, prolyl oligopeptidase