

ABSTRACT

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Title of dissertation thesis: Phytochemical Studies of Potential Phytopharmaceuticals using Separation Methods

The main aim of this diploma thesis was the identification of main alkaloidal components from the fraction of *Papaver rhoeas* L. (family *Papaveraceae*) alkaloidal extract - fraction PR-12-23. The introduction to the theoretical part summarizes alkaloids found in *Papaver rhoeas* L. and describes the separation methods used in the isolation process at the department of Pharmacognosy and Pharmaceutical botany.

Two main compounds within the extract were identified and separated based on HPTLC, HPLC-MS, and GC-MS chromatographic separation methods. For the subsequent fractions, the HPLC method development, optimization, and scaling up from analytical to preparative scale was done. After identification with the help of analytical HPLC and GC, the compounds were separated into fractions, isolated using preparative HPLC, and identified using NMR. The purified isolates were tested for anti-butyrylcholinesterase and cytotoxic biological activity, linked to AD and cancer, respectively.

The first isolated alkaloid (+)-Rhoeadine (ED-PR-12-23-F6a) appeared to be potentially not suitable for further research and use in Alzheimer's disease therapy as a cholinesterase inhibitor.

The second alkaloid (+)-Caaverine exhibited promising activity as a butyrylcholinesterase inhibitor. This compound also underwent cytotoxic screening, the results of which demonstrated low cytotoxicity against cancer cell lines and normal cell line.

Finally, the other isolated alkaloidal compounds were regrettably isolated in insignificant amounts and, as a result, were not able to be further specified. These compounds were also found in the following fractions. Therefore, there is a potential to identify them in successive phytochemical screening.

Key words: Natural substances, Liquid chromatography, Gas chromatography, Mass spectrometry, Phytopharmaceuticals