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Title of Rigorous Thesis: Biological activity of plant metabolites II. Screening of alkaloid plants on human cholinesterases inhibition.

The extracts of selected plants, which were expected to have an effect on brain tissue metabolism, were subjected to the screening of their biological activity. Summary ethanol (S) and ethylacetate (B) extracts were prepared by suitable method from various morphological parts of plants: *Argemone ochroleuca* Sweet (root), *Argemone platyceras* Link et Otto (root), *Argemone grandiflora* Sweet (root), *Corydalis cava* (L.) Schweigg. et Koerte (herb), *Fumaria officinalis* L. (herb), *Papaver argemone* L. (herb without fruits), *Papaver argemone* L. (capsules), *Papaver rhoeas* L. (capsules), *Papaver rhoeas* L. (flower), *Papaver rhoeas* L. (flower + herb). The process was based on the extraction of dry material by 95% ethanol, evaporation (S), and subsequent solution of the extracts (S) in diluted HCl, filtration, alkalization on pH 9-10,5 and extraction of alkaloid bases by ethylacetate (B).

Both types of extracts were subjected to the determination of acetylcholinesterase (AChE) and butyrylcholinesterase (BuChE) inhibitory activity with the use of Ellman´s spectrophotometric method and the IC_{50} values were subsequently calculated. Antioxidant activity of the samples (EC_{50}) was determined by DPPH test. Concerning both AChE and BuChE inhibitory activity, the alkaloid extract from roots of *Argemone ochroleuca* Sweet, *Argemone platyceras* Link et Otto, *Argemone grandiflora* Sweet and herb of *Corydalis cava* (L.) Schweigg. et Koerte appear to be perspective for further studies. Concerning the BuChE inhibitory activity, the alkaloid extracts from herb of *Fumaria officinalis* L. and *Papaver argemone* L., and extracts from flowers, flowering herb and capsules of *Papaver rhoeas* L. are interesting for further studies. The antioxidant activity of both types of extracts of all samples was not substantial, and that is why it is not possible to conclude if some of the alkaloids contained in the samples would show significant antioxidant effect. The EC_{50} values also proved that the summary extracts contain non-alkaloid substances with antioxidant activity.

Keywords: higher plants, alkaloids, DPPH, the Ellman's method, acetylcholinesterase, butyrylcholinesterase, inhibition