Abstract

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This diploma thesis was focused on alkaloids from combined fractions 13–15 of diethylether extract from *Papaver rhoeas* L. The methods used for extraction of the alcaloids include flash chromatography and preparative thin-layer chromatography. The structures of isolated compounds were determined by using mass spectrometric and spectrophotometric methods (GC-MS, NMR and optical rotation). Alkaloids were identified as galanthamine and *N,N*-dimethyltryptamine. Subsequently, *N*,*N*-dimethyltryptamine was tested for its biological activity against human cholinesterases, specifically acetylcholinesterase and butyrylcholinesterase. Galanthamine was not tested on ability to inhibit cholinesterase, since the compound has been already tested on this activity at the Department of Pharmacognosy and Pharmaceutical Botany.

N,N-dimethyltryptamine showed mild inhibitory activity against butyrylcholinesterase (IC_{50} = 44,14 ± 1,76) and no activity against acetylcholinesterase (IC_{50} = >100). Despite its mild activity towards butyrylcholinesterase, *N,N*-dimethyltryptamine can't be used in therapy of Alzheimer's disease, because of its toxicity. Galanthamine is a strong inhibitor of acetylcholinesterase (IC_{50} = 1,72 ± 0,12) and a weak inhibitor of butyrylcholinesterase (IC_{50} = 42 ± 1). This alkaloid is being used to treat AD, but in the investigated fraction was present as a contaminat, because galanthamine cannot be naturally found in *Papaver rhoeas* L.

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