

## ABSTRACT

Marková L.: Biologically active metabolite of plants 4. Alkaloids from *Zanthoxylum nitidum* and their biological activity. Charles University in Prague, Faculty of Pharmacy in Hradec Králové, Department of Pharmaceutical Botany and Ecology, Hradec Králové, 2012. Diploma thesis, 67 s.

The aim of the diploma thesis was to process the dried drug of *Zanthoxylum nitidum* and to obtain the total extract. By means of preparative thin layer chromatography one alkaloid was isolated and based on structural analysis (NMR, MS) and comparison of data from the literature identified as (-)-edulinine.

This alkaloid was tested for its inhibitory activity against human erythrocyte acetylcholinesterase activity (HuAChE) and human plasma butyrylcholinesterase (HuBuChE). The measured values for (-)-edulinine were  $IC_{50 \text{ HuAChE}} > 1000 \mu\text{M}$  and  $IC_{50 \text{ HuBuChE}} > 1000 \mu\text{M}$ . Galanthamin ( $IC_{50, \text{ HuAChE}} = 1,710 \pm 0,065 \mu\text{M}$ ,  $IC_{50 \text{ HuBuChE}} = 42,30 \pm 1,30 \mu\text{M}$ ) and huperzin A ( $IC_{50, \text{ HuAChE}} = 0,033 \pm 0,001 \mu\text{M}$ ,  $IC_{50 \text{ HuBuChE}} = >1000 \mu\text{M}$ ) were used as positive standards which are used in therapy of Alzheimer's disease. In comparison of standards (-)-edulinine was inactive and it can't be considered as perspective substance in treatment of Alzheimer's disease.

The alkaloid was also subjected to study of its antioxidant activity. The resulting  $EC_{50}$  value was higher than  $1000 \mu\text{M}$  and it does not show any therapeutically significant antioxidant activity.

Keywords: *Zanthoxylum nitidum*, Rutaceae, Alzheimer's disease, alkaloids, acetylcholinesterase, butyrylcholinesterase, antioxidant activity.