

ABSTRACT

Nováková, J.: Biological activity of plant metabolites XVII. Influence of alkaloids from several taxons of plants on acetylcholinesterase. Rigorous thesis. Charles University in Prague, Faculty of Pharmacy in Hradec Králové, 2008. p. 71.

Within the frame of the rigorous thesis, a screening of alkaloids from some botanical taxons used or toxikologically significant in Europe (and also in traditional Chinese medicine) on inhibition of acetylcholinesterase (AChE) was performed. Using a suitable extraction method the summary extracts from morfological parts of *Laurus nobilis* L. (leaf), *Buxus sempervirens* L. (sprigs and leaf), *Lycopodium clavatum* L. (aerial parts), *Nelumbo nucifera* Gaertn. (stamens and bulb), *Fritillaria thunbergii* L. (tuber), *Fritillaria cirrhosa* L. (tuber), *Stemona* spp. (root) a *Stephania tetrandra* S. Moore (root) have been obtained.

Individual extracts were prepared by digestion and further analyzed by TLC on silica gel in neutral and basic system for alkaloid content (Dragendorff-reactant). Inhibitory activities of the extracts and of the standards (physostigmine, galanthamine) were subsequently determined by means of autobiographical method using TLC (silica gel, only neutral developing system). AChE came from electrical conger, 1-naphtyl acetate and Fast Blue B Salt were used for the detection. As the result of a positive reaction, white zones on a purple background could be observed.

In most of examined botanical samples the presence of AChE inhibitors - exhibiting various levels of potency has been demonstrated. Unfortunately, no perceptible inhibitory activity was observed in some taxons, although they contain substances of alkaloid character. It is possible that they really lack the activity or their activity was suppressed by influence of reaction conditions (lack of botanical material, presence of ballast material).

Based on the intensity of AChE inhibition, the taxons *Buxus sempervirens* L. (sprigs and leaf), *Nelumbo nucifera* Gaertn. (stamens 60

and bulb) and *Fritillaria cirrhosa* L. (tuber) seem to be suitable for further studies.
Keywords: higher plants – alkaloids – acetylcholinesterase – inhibition