Abstract

Růžička, L. Isolation of alkaloids from *Geissospermum vellosii* Allemão and study of their biological activity. Diploma thesis, Department of pharmacognosy, Faculty of Pharmacy in Hradec Králové, Charles University, Czech Republic, 2020.

The aim of this diploma thesis are alkaloids from *Geissospermum vellosii*. This tree native in South America is commonly used for treatment of various diseases, including cognitive deficits in elder people[1]. The study is based on previous research that was focused on inhibition of human cholinesterases and glycogensynthase 3 β(GSK-3 β), which can be used in treatment of Alzheimer disease. Incidence of this disease is rising up in the last decades and it represents a big burden for both health service and economy of developed countries[2].

Isolation was carried out from crude crushed stembark. After extraction and agitation, 50.4 g of thick yellowish ether extract was obtained. This extract showed activity against cholinesterases ($IC_{50\ AChE}$ = 15.19 ± 0.96 μg/ml and $IC_{50\ BuChE}$ = 0.37 ± 0.049 μg/ml). Later, this extract was separated to 16 fractions by column chromatography.

Fraction GV9 was chosen for additional research. Thin layer chromatography was carried out for purification and extraction of white crystalline alkaloid. Structure was determined by physical-chemical methods.

Obtained alkaloid was later identified as indole alkaloid geissoschizoline, based on the MS and NMR spectres available in literature.

Isolated geissoschizoline did not show significant inhibition activity against human cholinesterases (inhibition of AChE = 12.82 ± 2.99 % and inhibition of BuChE = 40.40 ± 1.42 %). It's activity against GSK-3 β was measured and showed better results.

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Key words:

Geissospermum vellosii, acetylcholinesterase, butylcholinesterase, bark, biological activity, alkaloidal extracts, isolation of alkaloids, GC/MS analysis

References:

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