

POSTER PRESENTATIONS

CHROMATOGRAPHIC ISOLATION AND ENZYME INHIBITION OF LUPININE FROM *Anabasis salsa*

P.Zh. Bekisheva^{1*}, Kh.I. Itzhanova¹, Zh.S. Nurmaganbetov¹, W. Kukula-Koch²

¹*School of Pharmacy, NCJSC «Karaganda Medical University», 100008, Karaganda, Kazakhstan, Gogol Str. 40.*

²*Department of Pharmacognosy with Medicinal Plants Garden, Medical University of Lublin, 1 Chodzki Str., 20-093 Lublin, Poland.*

*Corresponding author: pernesh1983@mail.ru

Inhibition of acetylcholinesterase (AChE) represents a key therapeutic strategy in the management of neurodegenerative disorders, particularly Alzheimer's disease. The search for highly effective and low-toxicity plant-derived AChE inhibitors remains an urgent task in modern pharmacy. *Anabasis salsa* (C.A. Mey.) Benth. ex Volken, a halophytic plant rich in quinolizidine alkaloids including lupinine, stands out as a promising source of such bioactive compounds. This study aimed to isolate lupinine from *Anabasis salsa* extract using advanced centrifugal partition chromatography (CPC) and to evaluate its anticholinesterase potential.

The aerial parts of *Anabasis salsa* were collected in the Karaganda Region during the flowering stage. To optimize alkaloid recovery, the raw material was alkalized with a 30% KOH solution and extracted via maceration using 90% ethanol. Fractionation and purification were performed on a Spot CPC system (Armen Instrument) using a tailored biphasic solvent system composed of methyl tert-butyl ether (MTBE) : acetonitrile (ACN) : *n*-butanol : water in a 2:2:1:5 (v/v/v/v) ratio. Qualitative and quantitative profiling of the fractions was conducted via HPLC-ESI-QTOF-MS/MS. The AChE inhibitory activity was evaluated using a fluorometric assay with berberine chloride as a positive control.

The optimized extraction workflow with preliminary alkalization resulted in a high lupinine content of 6.35% in the crude extract. Liquid-liquid separation via CPC successfully eliminated irreversible adsorption on solid matrices, reducing sample loss. A total of 28 fractions were collected, and purified lupinine was effectively isolated in fraction 24. In biological assays, the isolated lupinine exhibited strong AChE inhibitory capacity with an inhibition value of 47.90%. Notably, this potential surpassed the performance of the reference standard berberine under identical experimental conditions.

An efficient, scalable, and selective protocol for the isolation of the alkaloid lupinine from the complex plant matrix of *Anabasis salsa* using CPC has been established. The high AChE inhibitory activity of the isolated compound highlights its prospective neuroprotective capabilities, rendering it a valuable candidate for the development of novel herbal pharmaceuticals targeting cognitive decline.