ANKARA UNIVERSITY
FACULTY OF PHARMACY

ISOPS 13th International SYMPOSIUM ON PHARMACEUTICAL SCIENCES

Book of Abstracts



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Introduction: Tropomyosin-receptor kinase B (TrkB), one of the most widely distributed neurotrophic receptors in the central nervous system, is the key receptor for brain-derived neurotrophic factor (BDNF). BDNF signaling has a therapeutic prominence for the management of various neurodegenerative diseases including Alzheimer's and Parkinson's diseases. While several phytochemicals show their neuroprotective effects by increasing the expression of neurotrophins and their associated receptors, only a few compounds are able to mimic the effects of neurotrophins (1). In this study, we aimed to develop a Cellular membrane affinity chromatography (CMAC) column that allows to screen complex natural matrices such as plant extracts for the presence of pharmacologically active specialized metabolites mimicking the effects of BDNF.

Materials and Methods: SH-SY5Y Neuroblastoma cells overexpressing TrkB were used to prepare CMAC columns (CMAC (+)). Homogenization, solubilization, dialysis, packing, and characterization steps required for developing a functional CMAC column were performed respectively (2) with some important changes. Negative control CMAC columns (CMAC(-)) were also prepared using SH-SY5Y TrkB-NULL cells, to be able to discern specific and non-specific interactions.

Results: We succesfully developed a novel CMAC column containing immobilized cell membrane fragments with fully-functional TrkB receptors for the first time. We proved the presence of the functional TrkB receptors in CMAC (+) compared to CMAC (-) by using frontal affinity chromatography and confocal microscopy.

Conclusions: In the drug discovery process, CMAC columns with the immobilized TrkB receptors can be used to characterize known ligands and to screen plant extract to find new ligands binding to TrkB receptors and mimicking the effects of BDNF.

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OP150: *IN VITRO* BIOLOGICAL EFFECTS OF ENDEMIC ANATOLIAN SPOTTED NEWT DERMAL VENOM: A POTENTIAL ACTIVE PHARMACEUTICAL INGREDIENT (API) FOR DRUG DELIVERY SYSTEMS

[1,2]Karış, M., **[3]Çimik, A.**, [4]Gürel-Gürevin, E., [5]Öztürk, AA., [6]Kıyan, HT..

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Introduction: *Neurergus strauchii strauchii* Steindachner, which is a member of the *Salamandrid* genus, has a haemolytic dermal venom (1). Previously, the dermal venom microflora of *Neurergus* sp. has been reported to exhibit antimicrobial activities against pathogene microorganisms (2) The main goal of this study is research on the *in vitro* anti-inflammatory, antioxidant and antimicrobial activities of dermal venom of *Neurergus strauchii*.

Materials and Methods: *In vitro* anti-inflammatory, antioxidant and antibacterial effects of dermal venom of *Neurergus strauchii* were determined by using *in vitro* COX-1 & COX-2, DPPH scavenging assays and agar microdilution method. SC-560, celecoxib, Vit C and chloramphenicol were used as positive controls. *Bifidobacterium animalis ssp lactis* B94 was used as obligatory as well as *Lactobacillus reuterii* DSM 17938 was used as a facultative anaerobic microorganism.

Results: The total protein amount of the secretion was found at 1700 µg/mL. IC_{50} results of venom were calculated as 157.9770, 96.84, 11.6873 µg/mL for *in vitro* COX-1 & COX-2, DPPH inhibitons respectively. Antimicrobial activity MIC results of venom were determined as >400µg/mL against both of the microorganisms.

Conclusions: Venom inhibited all enzyms and DPPH on related concentrations. It is safe on obligatory and facultative anaerobic microorganisms. This result supports the texistence of probiotic dermal venom microflora (2). The results of this study indicated that link

between related enzyme activities and probiotic microorganism protective activity. More detailed analysis will be cconducted in the future stages of the study, and different drug delivery systems will be designed and characterized by using the relevant substance as an API.

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OP151: PHYTOCHEMICAL ANALYSIS AND BIOLOGICAL ACTIVITY OF *NEPETA CADMEA* BOISS

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Introduction: The members of the *Nepeta* genus, which grow in the mountainous regions of Europe, Asia, North Africa, North America and tropical climates, are popularly used due to their wound healing, antihelmintic, antirheumatic and cough sedative features (1). *Nepeta cadmea* Boiss. which is an endemic species of Turkey grows naturally in West and South Anatolia (2). In the current study, phytocemical and *in vitro* enzyme inhibitory studies were performed on the methanol extract of the aerial parts of *N. cadmea*.

Materials and Methods: *N. cadmea* was collected from Denizli in June, and deposited in the Herbarium of Ankara University Faculty of Pharmacy (AEF28879). Methanol extract was obtained using magnetic stirrer at room temperature. *N. cadmea* was examined qualitatively and quantitatively for the phenolic compounds characterization using HPTLC and reverse phase HPLC methods. Also, *in vitro* alpha-glucosidase and alpha-amylase enzyme inhibitory activity tests were performed to evaluate the antidiabetic potential (3, 4).

Results: As a result of TLC analysis, optimal two solvent systems were determined and HPTLC analysis were carried out. Qualitative analysis revealed that TLC and HPTLC findings were found to be parallel with HPLC results. According to the HPLC outcomes, tremendous amount of rosmarinic acid (0,6290±0,0095%) together with chlorogenic acid (0,0429±0,0012%) and caffeic acid (0,0027±0,0002%) were detected and quantified in the extract. In a previous study, it was indicated that methanol extract of the plant was lack of rosmarinic acid, which was contrary to our findings (2). Alpha-glucosidase and alpha-amylase inhibitory values were recorded as 17,14±2,18% and 36,74±7,23% at 1mg/mL concentration, respectively.

Conclusions: It was concluded that *N. cadmea* was found to be rich in phenolic acids such as rosmarinic acid, which possibly contributed to the promising enzyme inhibitory activity.

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OP152: METABOLOMICS AND ACETYLCHOLINESTERASE INHIBITORY ACTIVITY STUDIES ON *DACTYLIS GLOMERATE* L. AND *HORDEUM MURINUM* L.

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Introduction: Metabolomics (Phytomics in plants) is defined as a comprehensive quantitative and qualitative analysis of all metabolites present in a particular cell, tissue or organism (1). Alzheimer's disease is an age-related, irreversible, progressive neurodegenerative disease (2). Acetylcholinesterase inhibitory compounds and extracts can be effective on Alzheimer's and are used (3). In this study acetylcholinesterase inhibitory activities and metabolic profiles of *Dactylis glomerata* L. and *Hordeum Murinum* L. (Poaceae) were investigated.

Materials and Methods: In this study methanolic extracts of aerial parts from *Dactylis glomerata* L. and *Hordeum Murinum* L. were used. GC-MS and LC-QTOF-MS is used to determine metabolic profiles and an enzymatic assay is applied for acetylcholinesterase inhibitory activities.

Results: 296 primary metabolites by using gas chromatography-mass spectrometry (GC-MS),